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THE

LONDON JOURNAL OF BOTANY;

CONTAINING

FIGURES AND DESCRIPTIONS

OF

SUCH PLANTS AS RECOMMEND THEMSELVES BY THEIR
NOVELTY, RARITY, HISTORY, OR USES;

TOGETHER WITH

BOTANICAL NOTICES AND INFORMATION,

AND

OCCASIONAL PORTRAITS AND MEMOIRS OF EMINENT
BOTANISTS;

BY

SIR W. J. HOOKER, K.H., L.L.D., F.R.A., & L.S.

VICE-PRESIDENT OF THE LINNÆAN SOCIETY; HONORARY MEMBER OF THE ROYAL IRISH
ACADEMY; MEMBER OF THE IMPERIAL ACADEMY CÆSAR-LEOPOLD. NATURÆ CURIOSORUM;
OF THE IMPERIAL SOCIETY CÆSAR. NATURÆ CURIOSORUM OF MOSCOW; OF THE ROYAL
ACADEMIES OF SWEDEN, PRUSSIA, LUND; OF THE ACADEMIES OF PHILADELPHIA, NEW
YORK, BOSTON; OF THE NAT. HIST. SOCIETY OF MONTREAL, &c. &c.
AND DIRECTOR OF THE ROYAL BOTANIC GARDENS OF KEW.

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WITH TWENTY-THREE ENGRAVED PLATES.

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EDITED BY

SIR W. J. HOOKER, K.H. L.L.D. F.R.A. & L.S.

I.—*Notes on a Botanical Excursion to the Mountains of North Carolina, &c.; with some remarks on the Botany of the higher Alleghany Mountains.*

(*In a letter to* Sir W. J. Hooker, *by* ASA GRAY, M.D.)

THE peculiar interest you have long taken in North American Botany, and your most important labours in its elucidation, indicate the propriety of addressing to yourself the following remarks, relating, for the most part, to the hasty collections made by Mr. John Carey, Mr. J. Constable, and myself, in a recent excursion to the higher mountains of North Carolina. Before entering upon our own itinerary, it may be well to notice, very briefly, the travels of those who have preceded us in these comparatively unfrequented regions. The history of the Botany of the Alleghany Mountains would be at once interesting, and on many accounts useful, to the cultivators of our science in this country; but with my present inadequate means, I can only offer a slight contribution towards that object.

So far as I can ascertain, the younger (William) BARTRAM was the first botanist who visited the southern portion of the Alleghany Mountains. Under the auspices of Dr. Fothergill, to whom his collections were principally sent, and with whom his then surviving father had previously corresponded, Mr. Bartram left Philadelphia in 1773, and after travelling in Florida and the lower parts of Georgia for three years, he made a transient visit to the Cherokee country, in the spring of 1776. In this journey, he ascended the Seneca or Theowee river, one of the principal sources of the Savannah, and crossing the mountains which divide its waters from those of the Tennessee, he continued his travels along the course of the latter to the borders of the present state of Tennessee. Finding that his researches could not be safely extended in that direction, after exploring some of the higher mountains in the neighbourhood, he retraced his steps to the Savannah river, proceeding thence through Georgia and Alabama to Mobile. His well known and very interesting volume of Travels* contains numerous observations upon the botany of these regions, with occasional popular descriptions, and in a few cases Latin characters of some remarkable plants; as, for example, the *Rhododendron punctatum* (which he calls *R. ferrugineum*), *Stuartia pentagyna* (under the name of *S. montana*), *Azalea calendulacea* (which he terms *A. flammea*), *Trautvetteria*, which he took for a new species of *Hydrastis*, *Magnolia auriculata*, &c. He also notices the remarkable intermixture of the vegetation of the north and south, which occurs in this portion of the mountains; where *Halesia*, *Styrax*, *Stuartia*, and *Gelsemium*† (although the latter is killed by a very slight frost in the open air in Pennsylvania), are seen flourishing by the side of the birches, maples, and

A few of his plants have not yet been re-discovered, and a considerable number remain among the rarest and least known species of the United States; it may therefore be useful to give a somewhat particular account of his peregrination, especially through the mountain region which he so diligently explored, and in which he made such important discoveries. For this purpose, I am fortunately supplied with sufficient materials, having had the opportunity of consulting the original journals of Michaux, presented by his son to the American Philosophical Society. I am indebted for this privilege to the kindness of John Vaughan, Esq., the Secretary of the Society, who directed my attention to these manuscripts, and permitted me to extract freely whatever I deemed useful or interesting. The first fasciculus of the diary is wanting; but we learn from a chance record, as well as from published sources,* that he embarked at L'Orient on the 29th day of September, 1785, and arrived at New York on the 13th of November. The private journal from which the following information is derived, commences in April, 1787; prior to which date he had established two gardens, or nurseries, to receive his collections of living plants, until they could be conveniently transported to France; one in New Jersey, near the city of New York; the other about ten miles from Charleston, South Carolina. Into the latter, it appears, he introduced some exotic trees, which he thought suitable to the climate; and the younger Michaux, who visited this garden several years afterwards, mentions two *Ginkos* (*Salisburia adiantifolia*), which in seven years had attained an elevation of thirty feet; also some fine specimens of *Sterculia platanifolia*, and a large number of young plants of *Mimosa Julibrissin*, propagated from a tree which hi father had brought from Europe. From this stock, probabl the latter has been disseminated throughout the Souther States, and is beginning to be naturalized in many places.

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* Vide Michaux, *Flora Boreali-Americana;* Introd.—See also *A Sketch of the progress of Botany in Western America, by Dr. Short,* in the *Transylvania Journal of Medicine,* No. 35; and in *Hooker's Journal of Botany,* for November, 1840. I am informed that an interesting notice of Michaux is contained in the eighth volume of the *Dictionnaire Encyclopédique de Botanique,* (under the head of *Voyageurs;*) a work which, unfortunately, I am not able at this moment to consult.

I have no means of ascertaining what portions of th country Michaux had visited previously to April 1787, whe he set out from Charleston on his first journey to the Alle ghany Mountains, by way of Savannah, ascending the rive of that name to its springs in the Cherokee country, an following very nearly the route taken by Bartram eleve years before.* He reached the sources of the Theowee Rive on the 14th of June, and was conducted by the Indian across the mountains to the head of the Tugaloo (the othe principal branch of the Savannah), and thence to the water of the Tennessee. After suffering much inconvenience fro unfavourable weather and the want of food, he returned to th Indian village of Seneca by way of Cane Creek, and descend ing along the Savannah to Augusta, arrived at Charleston o the 1st of July. His notes, in this, as well as subsequen journeys to the mountains, often contain remarks upon th more interesting plants he discovered; and in some case their localities are so carefully specified, that they might sti several sub-tropical plants, now well known to be indigenous to Florida, but which are not noticed in his Flora; such as the *Mangrove, Guilandina Bonduc, Sophora occidentalis,* two or three Ferns, and especially the *Orange.*[*] Leaving Florida at the beginning of June, he returned by land to Savannah and Charleston, where he was confined by sickness the remainder of the summer. Late in the autumn, however, he made a second excursion to the sources of the Savannah, chiefly to obtain the roots and seeds of the remarkable plants he had previously discovered. He pursued the same route as before, except that he ascended the Tugaloo, instead of the Seneca or Theowee river; crossing over to the latter, and climbing the higher mountains about its sources in the inclement month of December, when they were mostly covered with snow, he at length found some trees of *Magnolia cordata,* to obtain which was the principal object of this arduous journey. Retracing his steps, he reached Charleston at the end of December, with a large collection of living trees, roots and seeds. The remainder of the winter, Michaux passed in the Bahama Islands, returning to Charleston in the month of May. Early in June, he set out upon a journey to a different portion of the mountains of North Carolina, by way of Camden, Charlotte (the county town of Mecklenburg), and Morganton, reaching the higher mountains at "*Turkey Cove,* thirty miles from Burke Court House" (probably the head of Turkey Creek, a tributary of the Catawba), on the 15th of June. From this place he made an excursion to the *Black Mountain,* in what is now Yancey County, and afterwards to the *Yellow Mountain,* which Michaux at that time considered to be the highest mountain in the United States. If the *Roan* be included in the latter appellation, as I believe it often has been, this opinion is not far from the truth; since the *Black Mountain* alone exceeds it, according to Professor Mitchell's recent measurements. Descending this elevated range on the Tennessee side, and travelling for the most part through an unbroken wilderness, near the end of June he reached the *Block House*, on the Holston, famous in the annals of border warfare. Several persons had been killed by the Indians during the preceding week, and general alarm prevailing, Michaux abandoned his intention of penetrating into Kentucky, and resolved to botanize for a time in the mountains of Virginia. He accordingly entered that State, and arrived on the 1st of July at "Washington Court House, première ville dans la Virginie que l'on trouve sur la côte occidentale des Montagnes, en sortant de la Carolinie Septentrionale." To this he adds the following note: "*Première ville,* si l'on peut nommer *ville* une Bourgade composée de douze maisons (*log-houses*). Dans cette ville on ne mange que du pain de Maïs. Il n'y a ni viande fraîche, ni cidre, mais seulement du mauvais *Rum.*" Abingdon, the principal town of Washington County, is now a flourishing place; but Michaux's remarks are still applicable to more than one *première ville* in this region. From this place he continued his course along the valley of Virginia throughout its whole extent, crossing New River, the Roanoke, and passing by Natural Bridge, Lexington, Staunton, and Winchester; and thence, by way of Frederick in Maryland, and Lancaster, are unfortunately wanting. The earliest succeeding date I have been able to find, is March 27th, 1792, when he sold the "Jardin du Roi" at Charleston, and going slowly afterwards by water to Philadelphia, he botanized in New Jersey, and around New York until the close of May. In the beginning of June, he visited Milford, Connecticut, to procure information from a Mr. Peter Pound, who had travelled far in the north-west; and at New Haven took passage in a sloop for Albany, where he arrived on the 14th of June (having botanized on the way at West Point, Poughkeepsie, &c.); on the 18th he was at Saratoga; on the 20th he embarked at Skenesborough (Whitehall), explored more or less both shores of Lake Champlain, reaching Montreal on the 30th of June, and Quebec on the 16th of July.* The remainder of this season was devoted to an examination of the region between Quebec and Hudson's Bay, the botany of which, as is well known, he was the first to investigate. His journal comprises a full and very interesting account of the physical geography and vegetation of that inclement district.

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[*] Les bois étaient remplis d'oranges aigres, etc." Michaux, Moss.—See also Bartram's Travels, and Torr. and Gray, Flor. of North America, 1, p. 222.

Leaving Quebec in October, and returning by the same route, we find our persevering traveller at Philadelphia early in December. It appears that he now meditated a most formidable journey, and made the following proposition to the American Philosophical Society: "Proposé à plusieurs membres de la Société Philosophique, les avantages pour les Etats-Unis d'avoir des informations géographiques des pays à l'ouest de Mississippi, et demandé qu'ils aient à endosser mes traites pour la somme de £3,600, si je suis disposé à voyager aux sources du Missouri, et même à rechercher les rivières qui coulent vers l'Océan Pacifique. Ma proposition ayant été accepté, j'ai donné à M. Jefferson, Secrétaire d'Etat, les conditions auxquelles je suis disposé à entreprendre

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* Among the plants collected in this journey, he particularly mentions having found *Aconitum uncinatum* near Quebec; but in the Flora no other locality is given than the high mountains of North Carolina. Major Le Conte found it several years ago in the southern part of New York, and Mr. Lapham has recently detected it in Wisconsin.

ce voyage. J'offre de communiquer toutes les connaissances en histoire naturelle que j'acquerrai dans ce voyage." Remaining at Philadelphia and its vicinity until the following summer, he set out for Kentucky, in July, 1793, with the object of exploring the Western States, which no botanist had yet visited, and also of conferring with Gen. Clarke, at Mr. Jefferson's request, on the subject of his contemplated journey to the Rocky Mountains, &c. He crossed the Alleghanies in Pennsylvania, descended the Ohio to Louisville, Kentucky, traversed that State and Western Virginia to Abingdon, and again travelled through the Valley of Virginia to Winchester, Harper's Ferry, &c. arriving at Philadelphia on the 12th of December of the same year. Conferences respecting his projected expedition were now renewed, in which M. Genet, the envoy from the French republic, took a prominent part; but here the matter seems to have dropped, since no further reference is made to the subject in the journal; and Michaux left Philadelphia in February, 1794, on another tour to the Southern States. In July of that year, he again visited the mountains of North Carolina, travelling from Charleston to *Turkey Cove*, by his usual route. On this occasion he ascended the *Linville Mountain*, and the other his guide, he visited *Table Mountain* on the 5th of September, and proceeded, by way of Morganton, Lincolnton, Salisbury, and Fayetteville, North Carolina, to Charleston, where he passed the winter.

On the 19th day of April, 1795, our indefatigable traveller again set out, reached the Santee River, at Nelson's Ferry, ascended the Wateree or Catawba, to Flat-Rock Creek, visited *Flat Rock*,* crossed Hanging-Rock Creek, and ascended the little Catawba to Lincolnton. In the early part of May, he re-visited *Linville Mountain*, the *Yellow Mountain*, the *Roan*, and some others, and then descended Joe River and the Holston to Knoxville, Tennessee. Thence, crossing the Cumberland Mountains, and a wilderness one hundred and twenty miles in extent, he arrived at Nashville on the 16th of June, at Danville, Kentucky, on the 27th, and at Louisville on the 20th of July. In August he ascended the Wabash to Vincennes, crossed the country to the Illinois River, and devoted the months of September, October and November, to diligent herborizations along the course of that river, the Mississippi, the lower part of the Ohio, and throughout the country included by these rivers. In December, he descended the Mississippi in a small boat to the mouth of the

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* I believe this is the only instance in which the name of *Flat Rock* occurs in Michaux's journal; it is in *South Carolina*, not far from Camden. Here, without doubt, he discovered *Sedum pusillum* (Diamorpha, *Nutt.*); the habitat of which is said to be "in Carolina Septentrionali, loco dicto *Flat Rock*." Mr. Nuttall, who subsequently collected the plant at the same locality, inadvertently continues this mistake, by assigning the habitat, "Flat Rock, near Camden, *North* Carolina," as well in his *Genera* of *North American Plants*, as in a letter to Dr. Short on this subject. (Vide, *Short on Western Botany*, in the *Transylvania Journal of Medicine*, and in *Hooker's Journal of Botany* for Nov. 1840, p. 103). Hence some confusion has arisen respecting the locality of this interesting plant, since there is both a *Flat Rock* and a village named Camden in North Carolina, although the two are widely separated. After all, Pursh's habitat, "on flat rocks in North Carolina, and elsewhere," proves sufficiently correct; since Mr. Nuttall himself, and also Mr. Curtis and others, have subsequently obtained it in such situations, near Salisbury, in that State, and Dr. Leavenworth found it abundantly throughout the upper district of Georgia.

Ohio, and ascended the latter and the Cumberland to Clark ville, which he reached on the 16th of January, 1796, aft a perilous voyage in most inclement weather. Leavin that place on the 16th, he arrived at Nashville on the 19t of January, and after making a journey to Louisville an back again, he started for Carolina at the close of Februar crossed the Cumberland mountains early in March, reache Knoxville on the 8th, Greenville on the 18th, Jonesboroug on the 19th, and on the 22nd crossed the Iron Mountai into North Carolina, descended Cane Creek (which rises i the Roan), and spent several days in exploring the mountai in the vicinity, with his former guide, Davenport. In Ap he returned to Charleston by his usual route; and on t 13th of August embarked for Amsterdam in the ship Ophi This vessel was wrecked on the coast of Holland, on t 10th of October, and Michaux lost a part of the collecti he had with him; on the 23rd of December, 1796, he a rived at Paris with the portion he had saved. This notice the travels of Michaux on this continent, will suffice to sho with what untiring zeal and assiduity his laborious research were prosecuted; it should however be remarked, th greater facilities were afforded him, in some important r spects, than any subsequent botanist has enjoyed; the e mountains, ascending the beautiful *Roan*, where, "on a spot which commands a view of five States, namely, Kentucky, Virginia, Tennessee, North Carolina, and South Carolina, the eye ranging to a distance of seventy or eighty miles when the air is clear, it was Mr. Fraser's good fortune to discover and collect living specimens of the new and splendid *Rhododendron Catawbiense*, from which so many beautiful hybrid varieties have since been obtained by skilful cultivators."* The father and son revisited the Southern States in 1807, and the latter, after the decease of his father in 1811, came back to this country, and continued his indefatigable researches until 1817.

Many of the rarest plants of these mountains were made known, especially to English gardens and collections, by Mr. John Lyon, whose indefatigable researches are highly spoken of by Pursh, Nuttall, and Elliott. It is very probable that he had visited the mountains previous to his assuming the charge of Mr. Hamilton's collections near Philadelphia, which he resigned to Pursh in 1802. At a later period, however, he assiduously explored this region from Georgia as far north at least as the Grandfather Mountain, and died at Asheville, in Buncombe County, North Carolina, some time between 1814 and 1818. I am informed by my friend, the Rev. Mr. Curtis, that his journals and a portion of his herbarium were preserved at Asheville for many years, and that it is probable they may yet be found.

Michaux, the younger, author of the *Sylva Americana*, who accompanied his father in some of his earliest journeys, returned to this country in 1801, and crossed the Alleghany Mountains twice; first in Pennsylvania on his way to the Western States, and the next year in North Carolina, on his return to the sea-coast. In crossing from Jonesborou Tennessee, to Morganton, by way of Joe River (not *River*, as stated in his Travels), he accidentally stoppe the house of Davenport, his father's guide in these mounta The observations of the younger Michaux on this part of Alleghany Mountains, in a chapter of his Travels devote that subject, are mainly accurate.

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* *Biographical Sketch of* John Fraser *the Botanical Collector*, in *Hooker's Companion to the Botanical Magazine*, 2, p. 300 (with a portrait); an article from which I have derived nearly all the information I possess respecting the researches of the Frasers in this country, and to which the reader is referred for more particular information. A full list of the North American plants introduced into England by the father and son, is appended to that account.

"In the beginning of 1805," PURSH, as he states in preface to his Flora, "set out for the mountains and west territories of the Southern States, beginning at Maryland extending to the Carolinas (in which tract the interesting h mountains of Virginia and Carolina took my particular att tion), returning late in the autumn through the lower co tries along the sea-coast to Philadelphia." This pl however, was not fully carried out, since he does not app to have crossed the Alleghanies into the great West Valley, nor to have botanized along these mountains fart south than where the New River crosses the Valley Virginia.

At any rate it is certain that the original tickets of specimens in the herbarium of the late Professor Bart under whose patronage he travelled, as well as those in for the purpose of obtaining living plants and seeds. He also collected many interesting specimens, which may be found in the herbaria of Muhlenberg and Willdenow, where his tickets may be known by the orthography and the amusing mixture of bad English and German, (with occasionally some very singular Latin), in which his observations are written.

In the winter of 1816, Mr. NUTTALL crossed the mountains of North Carolina from the west, ascending the French Broad River (along the banks of which he found his *Philadelphus hirsutus*, &c.), to Asheville, passing the Blue Ridge, and exploring the *Table Mountain*, where he discovered *Hudsonia montana*, &c., and collected many other rare and interesting plants.*

As early as 1817, the mountains at the sources of the Saluda River were visited by the late Dr. MACBRIDE, the friend and correspondent of Elliott; who, in the preface to the second volume of his *Sketch*, pays an affecting and most deserved tribute to his memory, acknowledging the important service which he rendered to that work during its progress.

The name of RAFINESQUE should also be mentioned in this account; since that botanist crossed the Alleghanies four or five times between 1818 and 1833, in Pennsylvania, Maryland, and the North of Virginia, and also explored the Cumberland Mountains. A few years since, the *Peaks of Otter*, in Virginia, were visited by Mr. S. B. Buckley; and still more recently the same botanist explored the Mountains in the upper part of Alabama and Georgia, and the adjacent borders of North Carolina. Among the interesting contributions which the authors of the Flora of North America have received from this source, I may here mention the *Coreopsis latifolia* of Michaux, which had not been found by any subsequent botanist, until it was observed by Mr. Buckley in the autumn of 1840.

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* The spur of the Blue Ridge, from which the picturesque Table Mountain rises like a tower, is called by Mr. Nuttall the Catawba Ridge. I am informed, however, by Mr. Curtis, who is intimately acquainted with this region, that it is not known by that name, but called the *Table Mountain Ridge*. Its base is not washed by the Catawba River, but by its tributary, the Linville.

No living botanist, however, is so well acquainted with the vegetation of the southern Alleghany Mountains, or has explored those of North Carolina, so extensively as the Rev. M. A. CURTIS; who, when resident for a short time in their vicinity, visited, as opportunity occurred, the Table Mountain, Grandfather, Roan, Black Mountain, &c., and, subsequently, although prevented by infirm health from making large collections, extended his researches through the counties of Haywood, Macon, and Cherokee, which form the narrow southwestern extremity of Carolina. To him we are indebted for local information which greatly facilitated our recent journey, and, indeed, for a complete Itinerarium of the region south of Ashe County.

(*To be Continued*).

II.—*Notes upon Cape Orchidaceæ.* By PROFESSOR LINDLEY.

"Cape Town, afterwards at the French Hoek, fully fifty "miles distant, in company with *Satyridium rostratum*; and "finally on the top of Table Mountain later in the season. "In all places it keeps to the same characters. The flowers "are generally 1-2, but sometimes 3, the greatest number "seen. I suppose I have gathered fifty specimens."—*Harvey*.

2. Disa (Coryphæa) *Harveiana;* foliis linearibus acuminatis sublanceolatis recurvis, vaginis caulis bracteisque ovario brevioribus membranaceis acutis reticulatis, floribus geminis, sepalis oblongis obtusissimis, galeâ apice recurvâ calcare subulato recto ovario longiore, petalis lineari-lanceolatis tortis basi dilatatis, labello lineari-lanceolato.—"Near D. Draconis, "but differing in size, bracts, petals and labellum. Several "places about Table Mountain. First found in December "1837, afterwards December 1840, and January 1841, always "preserving the same characters."—*Harvey*.

3. Disa (Coryphæa) *vaginata* (Harvey in litt); glabra, foliis radicalibus parvis ovatis, caulis vaginis 4-8 membranaceis adpressis ciliatis resinoso-punctatis, floribus 3-6 subcorymbosis, bracteis coloratis ovarii longitudine, sepalis concavis ovatis, galeâ basi in calcar subulatum ovario parallelum productâ, petalis subfalcatis retusis apiculatis, labello lineari retuso basi trinervi.——"Near D. glandulosa. Table Moun- "tain."—*Harvey*.

4. Disa (Oregura) *porrecta* Swartz. Lindl. gen. and sp. 352.—"I have no doubt that this is *D. ferruginea* of Thunberg, "being found abundantly in his habitat in March and April, "and nothing else resembling his character being to be met "with."—*Harvey*.

5. Disa (Disclla) *maculata* (Harvey in litt.); caule folioso, foliis linearibus erectis basi dilatatis, bracteis foliaceis acuminatis inferioribus floribus longioribus, sepalis erectis ovatis acutis, galeâ subrotundâ acutâ basi in calcar breve obtusum ascendens productâ, petalis falcato-ovatis acutis ciliatis margine anteriore excisis, labello lineari.—"Summit of Table Mountain, "November."—*Harvey*.

6. Disa (Disella) *natalensis*; foliis oblongis erectis canaliculatis supremis abbreviatis sub spicâ imbricatis, spicâ cylindraceâ densiflorâ, sepalis oblongis obtusis patentibus galeæ concavæ æqualibus, calcare subulato è mediâ galeâ pendulo eâque vix longiore, petalis oblongis concavis galeâ brevioribus, labello lineari sepalis æquali.—Port Natal, Harvey. A plant with the aspect of a Monadenia. The spike in my only specimen is between two and three inches long, very dense, and consists of flowers about the size of Orchis mascula.

7. Brownleea. (*Harvey in litt.*) Flos et habitus Disæ Disellæ. Petala recta galeæ agglutinata. Labellum minimum inflexum basi in bursam columnæ adnatam expansum. Anthera ascendens, biloba.

Brownleea *parviflora*, (Harvey in litt.); folio caulino solitario lineari-ligulato, spicâ densâ, bracteis linearibus acuminatissimis floribus longioribus, sepalis semi-oblongis deflexis cylindraceis parallelis, galeâ erectâ è dorso calcar crassum deorsùm arcuatum basi intrusum exserente, labello subulato.—"No radical leaves; flowers white."—Rev. J. B. in litt. Near King William's Town, Caffraria, March 1841. Rev. J. Brownlee.

8. Brownleea *cærulea*, (Harvey in litt.); foliis caulinis 2 membranaceis oblongo-lanceolatis acutis, spicâ oblongâ,

"which its *margins* adhere, while its inner or upper surface "is free; it thus forms a little *pocket.* These curious plants "were collected by Rev. J. Brownlee, a missionary stationed "at King William's Town, who has latterly sent me several "interesting plants, especially *Orchidaceæ*, and from whom I "expect many more. He has a good general knowledge of "Botany, and I wish that you would adopt his *name* for it."

9. PENTHEA *melaleuca*, Lindl. gen. and sp. 361.—"I do "not find the petals 'antheræ utrinque *adnata*,' but rather, "as in *Disa*, attached to the base of the column, but *perfectly free from the anther* though conniving over it. The "character of wanting a spur is only *absolutely* true in *P. patens*; in *P. melaleuca*, *obtusa*, and *filiformis* the galea is "either saccate or *umbonate*."—*Harvey*.

10. PENTHEA *atricapilla* (Harvey in litt.); foliis lanceolatis acuminatis canaliculatis margine involutis, vaginis caulis 6 apice foliaceis subulatis patentibus, corymbo denso multifloro, sepalis verticalibus inæquilateris ovato-oblongis acutis carinatis, galeâ lineari-oblongâ acutâ basi planâ apice cucullatâ, petalis oblongis obtusis apice denticulatis, labello subulato acuto pone basin utrinque obsoletè dentato.—This is the plant mentioned by me in the *Gen.* and *Sp. Orch.* as having been observed in Vahl's Herbarium, under the name of Satyrium hians. Mr. Harvey's note upon it is the following:

"*Root-leaves* several, lanceolato-acuminate, channelled or "with involute margins. *Stem* closely invested with about "six sheaths, with leafy, subulate spreading, acuminate "points, resembling the leaves, but shorter. *Flowers* densely "corymbose, opening horizontally; *bracteæ* ovate-acuminate, "leafy, longer than the ovary, involute at point; *galea* "linear-oblong, acute, flat at the base, cucullate above, and "produced at back into a compressed *umbo*; *sepals* vertical, "unequal-sided, somewhat ovate, oblong, acute, sharply "keeled, the front margin recurved and produced at the "base, the hind margin flat, the apices incurved (towards "the galea); *petals* supine, broadly oblong, obtuse, irregularly

" dentate at the apex, the upper angle incurved and produced " into a subulate tooth, the lower (basal) angle produced in " front (where it joins the column) into a channelled ear; " *labellum* subulate, acute, toothed at each side near the " base, substipitate.

" Stem six inches high. Sepals divided (as respects colour) " longitudinally into two portions; the anterior purple on " the inside and *black* on the outside, the other white. Pe- " tals fleshy, greenish, mottled with purple; purple at the " apex. Galea greenish-white.

" Hottentots Holland Mt. *Mr. Bowie*, 1818. Muyrenberg, *Mr. Upjohn*, 1840.

" Certainly distinct from *P. melaleuca*. I send my only " duplicate, but hope to get more next year. It is a most " singularly lurid-looking plant."

III.—*Descriptions of several new Genera of South African Plants.* By THE HON. W. H. HARVEY.

HIPPOCRATEACEÆ.

This genus is founded on a shrub (*D. Kraussii*, nob.) discovered at Port Natal by Dr. Krauss, specimens of which are distributed as No. 348 of his collection. It is the first individual of the Order recorded as South African, and it will be seen that it differs remarkably from the published genera by having a *tripartite* flower, and *alternate* leaves; but if the *Hippocrateaceæ* be mainly distinguished from allied groups by the *position*, number and structure of the stamens and ovules, our plant can hardly be referred elsewhere. It has, indeed, much the appearance of a *Salacia*, to which genus, till I had carefully examined the floral envelopes, I was disposed to refer it. The generic name is derived from διπλοος, *double*, and ἕω, εσω, *to clothe*, in allusion to the duplication of calyx, corolla and discal-margin.

ESCALLONIACEÆ.

2. CHORISTYLIS.—*Calycis* tubus obconicus, ovario adnatus; *limbus* laciniis 5, erectis, distantibus, subulatis, persistentibus. *Corollæ* petala 5, summo calycis tubo inserta, deltoideo-subulata, trinervia, sericea, calycis laciniis longiora, persistentia, æstivatione valvata. *Stamina* 5, petalis alterna; *filamenta* brevissima; *antheræ* (minutæ) biloculares, ovatæ, longitudinaliter dehiscentes, hirsutæ, connectivo carnoso. *Styli* duo, subconnati, demum soluti, divergentes; *stigmata* capitata, carnosa. *Ovarium* inferum, biloculare; ovulis juxta dissepimentum utrinque plurimis. *Capsula* semi-infera, apice conica, calycis limbo petalis stylisque disjunctis coronata, bilocularis, inter stylos septicide dehiscens. *Semina* oblonga, subincurva, raphe prominula; testa coriacea. *Embryo ?* — Frutex 8-10 pedalis, montanus; foliis alternis, exstipulatis, simplicibus, elliptico-ovatis, serratis, glabris, longe petiolatis; paniculis parvis, parcè ramosis, axillaribus terminalibusque; floribus viridibus. Genus *Forgesiæ* proximum; sepalis petalisque persistentibus, staminibusque diversum.

Ch. rhamnoides, nob.—For specimens of this interesting plant, which seems to have escaped the notice of all previous collectors, I am indebted to my valued correspondent, the *Rev. J. Brownlee;* who gathered it, "near the Berlin Missionary Institution on the Kat Berg. It grows at the east point of the mountain, in the highest part of the forest, partly shaded by the large timber." In this situation, it is occasionally covered with snow in the winter season. As a genus, it is nearly related in character to *Forgesia,* Commers., nor is the habit very dissimilar. The *styles* can never be said to be fully united together, though the stigmas, which are remarkably large, are at first connate. The *anthers* are unusually small, nor am I quite sure that they are perfect. The generic name is in allusion to the separable styles. Unless *Montinia* be referable, as I am inclined to think, to *Escalloniaceæ,* this is the only South African genus of that Order.

RUBIACEÆ.

3. MITRASTIGMA. *Calycis* tubus globosus, ovario adnatus; limbus 4-5-dentatus, erectus, brevissimus. *Corollæ* tubus infundibuliformis, fauce hirsuta; limbus 4-5-fidus, lobis revolutis, æstivatione valvatis. *Stamina* 4-5, corollæ fauce inserta, breviter exserta, recurvo-patentia; antheræ oblongæ,

cies. As a genus, it is perhaps nearer to *Grumilea* than to *Psychotria*, but seems distinct from both. I may add that "*Psychotria* 3470 *a*," of Drege's Herbarium is *Pittosporum viridiflorum*.

4. KRAUSSIA. *Calycis* tubus ovatus, ovario adnatus; limbus erectus, brevis, 5-fidus. *Corolla* infundibuliformis, tubo brevi obconico, fauce hirsuta, limbi 5-partiti lobis patentibus, oblongis, obtusis, æstivatione contorto-imbricatis. *Stamina* 5, fauce inserta, exserta; *filamenta* brevissima; *antheræ* lanceolatæ, subsessiles. *Stylus* brevissimus; *stigma* maximum, exsertum, fusiforme, striato-lamellatum, bifidum, lobis erectis. *Ovarium* disco carnoso coronatum, biloculare; ovula in loculis solitaria, medio dissepimenti inserta. *Bacca* carnosa, globosa, calycis limbo connivente coronata, dipyrena. Frutex *Natalensis*; foliis lanceolatis, v. ovato-lanceolatis, acutis, glabris, brevè petiolatis; cymis corymbosis, axillaribus.

K. floribunda, nob.—No. 121 of Dr. Krauss's Natal plants. I had previously received good specimens, both in flower and fruit, of this handsome shrub, from a soldier of the 72nd Regt. whom I employed to collect for me at Port Natal. In habit, it is not unlike *Carporhalis lanceolata* of Meyer, though readily distinguished by the slightly exserted stamens and the very remarkable stigma. I wish it to bear the name of *Dr. Krauss*, whose herbarium, formed at Port Natal, though small, contains several new and curious genera.

5. PENTANISIA. *Calycis* tubus oblongus; limbus 5-fidus, dentibus valde inæqualibus, 1-2-3 maximis, foliaceis, reliquis minutissimis, subulatis, obsoletisve. *Corolla* hypocrateriformis, tubo elongato, tenui, cylindraceo, fauce obconicâ, hirsutâ, limbo 5-partito, lobis apice inflexis, æstivatione valvatis. *Stamina* 5, corollæ fauce inserta, exserta v. inclusa. *Stylus* exsertus; stigma bifidum. *Ovarium* biloculare; ovula in loculis solitaria. *Fructus?*....*Herbæ* hirsutæ v. glabræ,

erectæ; foliis oppositis, sessilibus; stipulis laciniatis; spicis v. capitulis terminalibus; floribus cæruleis.—Genus SPERMACOCEARUM, *Knoxiæ* affine; differt floribus pentameris.

This genus, which *Dr. Arnott* suggests to me is allied to *Knoxia*, from which it differs in the five-parted flowers, a very unusual character in *Spermacoceæ*, is proposed for the *Crusea variabilis* and *C. glaucescens* of Meyer in Herb. Drège, which are clearly not referable to *Crusea*, Cham. and Schl. *P. variabilis* is certainly a very sportive plant, if all the specimens distributed under that name belong to it; but perhaps there are two species confounded; one having the anthers nearly sessile and *included*; the other with long filaments, *exserted*. The generic name is compounded of *πεντε* and *ανισος*.

MYRSINACEÆ.

6. CHORIPETALUM. Alph. D.C.—No. 407, of Dr. Krauss's Natal herbarium, appears to constitute a second species of this genus. The chief differences in character are, that in our plant the flower is 5, and not 4-parted, the ovules seem to be solitary, not in pairs, and the stigma is simple, not emarginate.

viridibus v. purpureis.—Genus PERIPLOCEARUM, *Streptocauloni* affine.

1. R. *Zeyheri.*—Scaberula; caule (subsimplici? ut videtur) erecto, subtereti, striato-angulato; foliis sessilibus, lanceolatis, acutis, basi attenuatis, rigidis; calycis laciniis ovatis, obtusis; squamis coronæ brevibus, trifidis, lobo medio filiformi, longissimo, lateralibus brevibus, dentiformibus, incurvis.—Uitenhage, *C. Zeyher.*—(v. s.)

Of this I received a single and not very perfect specimen in 1838, from Mr. Zeyher, who gathered it "in a field by the Zwart Kops River," and who informs me that it had a tuberous root, like that of *Brachystelma.* The specimen, which is evidently young, is about five inches high, and apparently erect. Flowers greenish.

2. R. *divaricata.*—Pubescens; caule dichotomè ramoso; ramis divaricatis, compressis, ancipitibus; foliis petiolatis, oblongo-ovatis, acutis, basi obtusis, suprà glabris, subtus margineque pubescentibus; calycis laciniis subulatis, acutis; squamis coronæ oblongis, subspathulatis, apice erosis, subulato-cuspidatis, cuspide brevi. (v. s.)

Of this also I possess only a solitary specimen, which was gathered at Port Natal by *Miss Owen*, and communicated to me by *H. B. Rutherford, Esq.* It is seemingly decumbent, and much branched in a di-trichotomous manner. Flowers purple.

8. CHYMOCORMUS.—*Calyx* 5-partitus. *Corolla* tubo brevi, infundibuliformi; limbo 5-partito, laciniis linearibus, patentibus, tubo longioribus, æstivatione contorte-imbricatis. *Corona staminea* tubulosa, gamophylla, ore decemfidâ, laciniis 5 (antheris oppositis) elongatis, tricuspidatis, intus processu subulato apice uncinato instructis; 5 alternis multo minoribus, tridentatis. *Antheræ* ovatæ, distinctæ, appendice elongatâ, membranaceâ, petaloideâ terminatæ. *Pollinia* 10 per paria basi affixa, erecta. *Stigma* conicum, muticum, emarginatum. *Folliculus* solitarius, rugosus.—*Herba* volubilis,

radice maxima, tuberosa, eduli; caule pubescenti, tereti; foliis oppositis, petiolatis, elliptico-oblongis, mucronatis, patentibus, glabris; umbellis imperfectis, axillaribus, pedunculo subnullo, pedicellis 4-5 v. pluris, pubescentibus; floribus semi-uncialibus, albis, calyce corollâque pubescentibus.

The above analysis is taken from a specimen of *Pergularia? edulis*, Thunb. (Zeyher, 965), the "Ku" of the Hottentots, for which I am indebted to *Mr. Zeyher*, who gathered it in the Uitenhage district. *Thunberg* had never seen the open flower, and referred it to *Pergularia*, merely from its habit. Its root is still eaten, as he describes, by wanderers in the desert, and the native name at once ascertains the identity of our plant. Its *corona* is so remarkable, that I do not hesitate to propose it as the type of a new genus.

APOCYNACEÆ.

9. Toxicophlæa. *Calyx* 5-partitus, laciniis lanceolatis, basi intus disco obsoleto annulari corollæ exteriori auctis. *Corolla* hypocraterimorpha, tubo calyce longè exserto, cylindrico, fauce nuda subinfundibuliformi; limbo laciniis 5, brevibus, obliquis, imbricatis, æstivatione contortis. *Sta-*

It is but justice to *Mr. Bowie* to state, that in his journal, written twenty years ago, there is an excellent figure of this plant, and its affinities are truly stated as being near *Carissa*, (which is almost identical with *Arduina*), and not with *Cestrum*, where Thunberg placed it, and where it has carelessly been suffered to remain.

10. Piptolæna. *Calyx* tubulosus, breviter 5-fidus, tubo basi intus squamis carnosis muricato, post anthesin circumscisso-deciduo. *Corolla* sub-infundibuliformis (tubo urceolato, apice constricto; fauce nuda latissime cyathiformi); limbi laciniis 5, obliquis. *Stamina* 5, fauce inserta, subexserta, conniventes; *antheræ* subsessiles, sagittatæ, acuminatæ, appendiculatæ. *Stylus* filiformis, inclusus; stigma capitatum, bilobum, processibus 4, recurvis, lamelliformibus subtensum. *Folliculi* (ex Mey.) "baccati, pruniformes, patentissimi, substantiâ corticali crassâ; *semina* plurima, ovoïdea, nuda, intra pulpam nidulantia." Arbor, ligno subspongioso; foliis in apicibus ramulorum confertis, oppositis, breve petiolatis, oblongis, obtusis, basi cuneatis, integerrimis, subcoriaceis, glabris; cymis axillaribus.

Voacanga Dregei, E. M. to which I venture to refer No. 27 of Dr. Krauss's Natal Plants, (having received no specimen from Drège), appears to me either to constitute a new genus, or to be a second species of *Orchipeda*, Bl. My analysis is taken, except the description of the fruit, which I have copied from Meyer, from Dr. Krauss's specimen, which is unfortunately in a very imperfect state, and I have only had one *withered* flower for examination. The *deciduous* calyx, whose tube is lined inside with several rows of fleshy scales, and a difference in the stigma, are the characters by which our plant differs from *Voacanga*.

LOGANIACEÆ. (*Strychneæ*).

11. Brehmia. *Calyx* 4-6-partitus, laciniis subulato-attenuatis, corollâ longioribus. *Corolla* tubo brevi infundibuli-

formi, fauce barbatâ, limbo 4-5-lobo, erecto-patenti, lobis æstivatione valvatis. *Stamina* imo corollæ tubo inserta, inclusa; filamenta filiformia; *antheræ* breves, cordatæ, capillis longissimis intertextis connexæ. *Pollen* trigonum. *Ovarium* disco crenato insidens, ovatum, uniloculare; ovula in placentâ carnosâ centrali plurima, peltata. *Stylus* brevissimus, conicus; stigma oblongum, capitatum. *Bacca* corticata, globosa, unilocularis, polysperma. *Semina* in pulpam nidulantia, umbilico ventrali. *Testa* coriacea; embryo in basi albuminis cornei bilamellati brevis; radiculâ ellipsoïdeâ, vagâ; cotyledonibus foliaceis, ovatis, 5-nervibus.—Arbor v. frutex; ramis divaricatis, strictis, ramulis sæpe in spinam excurrentibus; foliis oppositis, 3-5-nerviis, glabris; cymis vix ramosis, ramulis terminantibus, densis; floribus viridibus, parvis; baccis magnis; pulpa deliciosa repletis.

Strychnos spinosa, Lam.—E. Mey. in Herb. Drège (*Krauss* No. 99) is the type of this genus, which differs from *Strychnos*, as defined by Endlicher, in the calyx, stamens, ovary, and style; and seems to be nearly intermediate between that genus and *Ignatia*. I wish it to bear the name of *Mr. J. Brehm*, of Uitenhage, a gentleman to whom I am indebted for many interesting botanical communications, and

Capsula....? Herbæ v. suffrutices, ut videtur decumbentes; foliis oppositis, lanceolatis, integerrimis; floribus dense capitatis, axillaribus; bracteis rigidis, spinoso-dentatis, capitulum involucrantibus.

The genus *Crabbea*, which I formerly proposed, being identical with *Barleria*, I have selected a Natal plant, certainly allied to *Ruellia*, but, besides other marks, distinguishable by its very remarkable *stigma*, to supply its place. *Ruellia? nana* E. M.! in Dreg. Herb. to judge by its habit, for my specimen has no flower, appears also to belong to this genus. The generic character is exclusively taken from my *Cr. hirsuta*, to which the following specific character may be given: C. *hirsuta*; dense setoso-pubescens; foliis lato-lanceolatis, acutis, petiolatis; bracteis ovato-lanceolatis, acuminatis, cum spinis rigidis hirsutis marginatis.

13. RUTTYA. *Calyx* 5-partitus, laciniis lineari-attenuatis, flexuosis, longissimis. *Corollæ* tubus latus, calycis laciniis brevior, fauce hinc inflata; limbus bilabiatus, labio superiore erecto, semibifido, plano; inferiore valde deflexo, tripartito, lobis inter se subæqualibus. *Stamina fertilia* 2, fauce inserta, exserta, antheris unilocularibus, loculo obliquo basi mucronato; *sterilia* 2, brevia, dentiformia, inter fertilia posita. *Ovarium* sessile, biloculare; loculis 2-ovulatis. *Stylus* filiformis, pubescens, apice incurvus; *stigma* bifidum. *Capsula*....? Herba *Natalensis*; caule tereti, pubescente; foliis oppositis, ovato-lanceolatis, petiolatis, subglabris v. parce pubescentibus; spicis terminalibus, densis, bracteatis; bracteis calycis laciniis similibus, nisi latioribus; calycis laciniis mollissimis.

R. ovata, nob.—Discovered at Port Natal by *T. Williamson*, private in 72nd Regt. through whom I procured an interesting parcel of plants.—The genus is inscribed to the memory of *John Rutty*, M.D. an Irish physician and naturalist of the last century, and author of a "*Natural History of the County of Dublin*," and some other works.

14. SCLEROCHITON. *Calyx* basi bibracteatus, scariosus,

rigidus, persistens, 5-partitus, laciniis obtusis, tribus in
ribus minoribus. *Corolla* unilabiata, tubo incurvo,
latiore, latere superiore fisso; limbo (v. labio) antico,
quinquelobo. *Stamina* 4, corollæ tubo inserta, e
equalia; filamenta subulata, compressa; antheræ uniloc
adnatæ, verticales, margine subciliatæ. *Ovarium* biloc
loculis 2-ovulatis. *Stylus* filiformis, persistens; s
minutum, bifidum. *Capsula* coriacea, bilocularis, disp
Suffrutex erectus; foliis oppositis, ovato-lanceolatis,
acuminatis, patentibus, glabris; petiolis, ramulisque
centibus; floribus axillaribus, solitariis, subsessilibus;
bracteisque multistriatis, maxime rigidis, capsulam a
tentibus.

This description is taken from a curious plant, pr
from Natal, distributed by Drège without name, und
number 4037. Its habit is more that of some *Jus*
than of any genus of *Acantheæ*, to which latter tribe,
ever, it would seem to belong.

15. ACANTHOPSIS. *Calyx* 4-partitus, laciniis post
anticâ multo majoribus, anticâ bidentatâ. *Corolla* tubo
unilabiata, labio (antico) breviter quinquelobo, lobo
maiore, lateralibus auriculiformibus; margine posticâ e

thistle-like habit, and differing in the *corolla,* and very decidedly in the insertion and *structure* of the stamens.

EUPHORBIACEÆ.

16. **Ctenomeria.** *Flores* monoici. *Masc. Calyx* 5-partitus, laciniis integerrimis, æstivatione valvatis. *Petala* et *glandulæ* nullæ. *Stamina* plurima (50—60), toro globoso inserta, libera; filamenta capillaria! antheræ lineares, elongatæ, incurvæ, rigidæ, basifixæ, biloculares, longitudinaliter dehiscentes.—*Fœm. Calyx* 6-partitus, laciniis pectinato-laciniatis! *Corolla* nulla. *Ovarium* hirsutum, triloculare; ovula in loculis solitaria. *Styli* 3, longi, simplices, cylindrica, papillis densissime obsitis. *Capsula....?* Caule volubili suffruticosâ; foliis longè petiolatis, cordatis, crenatis, parcè pubescentibus; stipulis lanceolatis, deciduis; floribus masculis racemosis, racemis oppositifoliis, gracilimis, elongatis, pedicellis bracteatis; fœmineis solitariis.

Ct. cordata, nob.—This curious plant was gathered by Dr. Krauss at Port Natal, and is No. 186 of his collection. It may take its place near *Acalypha,* but is abundantly different from that and every other genus with which I am acquainted. The singularly slender, almost cobwebby filaments, and the linear rigid anthers of the male flowers, with the curiously cut segments of the female perianth, are its striking characters. The generic name is compounded of *κτεις* and *μερις,* in reference to the latter peculiarity. Some other new genera of *Euphorbiaceæ* are in my possession, but as my specimens are not complete I defer noticing them for the present. I may remark, however, that *Phyllanthus verrucosus* of Thunberg cannot be referred to that genus, having an uncertain number (5-6-7) of *free* stamens, springing irregularly from a number of glands which cover the bottom of the calyx without order. No. 468 of Krauss's Herbarium is very near *Microstachys,* Juss, if it be not a species of that genus.

IV.—*Some account of the Paraguay Tea* (*Ilex Paraguayensis*).

(*With figures*; TABS. I. II. and III).

FEW persons are ignorant of the fact, that, throughout a large portion of South America, a favourite beverage is employed under the name of *Maté* or *Paraguay Tea.* But many are of opinion that the plant producing it resembles the tea-plant of China, little aware that it is a kind of *Holly*, and a species not very unlike some of the varieties of our English Holly (*Ilex Aquifolium*). That there should have been a difficulty in determining the vegetable yielding so celebrated a drink, is the less surprising, when we consider that the country, where it has been extensively grown and prepared, whence it derives one of its appellations (Paraguay), and from which it is alone exported, has been held for a long period of years in the most complete state of tyranny and despotism of any country in the world, by the late Dr. Francia; of tyranny so great that no stranger was admitted within its limits, or if admitted, he was detained a prisoner.

Until about 1822, nothing whatever was known respecting the particular genus and species of the shrub whose leaves furnished the *Maté*, or *Paraguay Tea.* The first of these two

"Glaberrima, foliis cuneato-lanceolatove ovatis oblongis obtusiusculis remote serratis, pedunculis axillaribus multipartitis, stigmate quadrilobo, putaminibus venosis."

In 1824, Mr. Lambert, in a Supplement to his truly splendid work on the *Pines*, gave a description, and the first figure of this most interesting plant, under the name of *Ilex Paraguayensis*; a denomination which I adopt, partly because I think it best indicates the country whence our first knowledge of it was derived, and also because M. de St. Hilaire himself, in the preface to his "*Histoire des Plantes les plus remarquables du Brésil et du Paraguay*," had cancelled his previous appellation, probably on account of its inaccuracy, and adopts that of *Ilex Maté*. However appropriate this name may be, that of Mr. Lambert had surely the right of priority in its favour, and is, in every respect, unexceptionable.

The costly nature of Mr. Lambert's work has caused it to be a sealed book to the general reader; and his interesting account of the plant, together with the possession of a living *Ilex Paraguayensis* in the Botanic Garden of Glasgow, have often made me desirous of publishing some account of it in a more popular form; but the want of flowering and fruiting specimens for a long time deterred me, though I applied in every probable quarter for them, and for information on the subject. Mr. Tweedie, at length, with great difficulty, obtained for me a barren specimen from a Frenchman, who had visited Paraguay; and about the same time I was favoured with a fruiting specimen by the *Horticultural Society of London*, equally from Paraguay. These are figured in our TAB. I., and precisely accord, as to the foliage, with Mr. Lambert's figure. My next knowledge of the species was from Mr. Gardner, who sent me specimens, sparingly in fruit, gathered in the Organ Mountains (N. 346 of his collection), with the remark, "I did not meet with this in flower; but the structure of its fruit refers it to *Ilex*, as it agrees in every respect with St. Hilaire's description. It forms a small upright growing tree about 15 feet high. At Mr. March's

Fazenda, the leaves of it are used as tea, for which
are a good substitute. As three branches, with a s
fruit on each, were all I could obtain, I have not thoug
worth putting up specimens for general distribution."—
samples, be it observed, also precisely accord with
Lambert's figure and description, and with my Para
specimens. Still I was without flowering branches, til
wishes being known to Mr. Miers, he most kindly sen
the use of his specimens (accompanied by drawings),
the Botanical Garden at Rio, where the leaves are p
extensively used for tea. This I have figured at Tab.
and it will be seen that the leaves are much longer
narrower than those of the specimens from Paraguay
the Organ Mountains; and, moreover, the underside
invariably dotted with minute black glands. This is
bably the plant of St. Hilaire. I was at first dispos
consider it a distinct species, and the more so, as tea
pared at Rio, which it frequently is, is universally acknowle
to be very inferior to that of Paraguay. Further obs
tions, however, and the examination of specimens fro
Gomez of Rio, with the use of which I have been favo
by Dr. Lindley, and which seem to be exactly interme
between Mr. Miers's specimens and those from Paragua

Ilex *Paraguayensis*; glaberrima, foliis cuneato-lancealatove ovatis obtusiusculis obtuse inæqualiter serratis inferne integerrimis, racemis axillaribus paniculatis, pedicellis subumbellatis, calyce pubescente, drupis (siccis) suboctosulcatis.

α. foliis latioribus ferè obovatis (TAB. NOSTR. I). Ilex Paraguayensis. *Lamb. Pin. Tab. II. cum descr.* (1824). *Spreng. Syst. Veget. Cur. Post. p.* 48 (*excl. syn*). *St. Hilaire.*

β. foliis minoribus supernè minus latioribus, subtùs sæpè nigro-punctulatis.

Ilex Maté. *A. J. Gomez, in Herb. Lindl.*

γ. foliis longioribus angustioribus sensim acuminatis ferè oblongo-oblanceolatis subtùs copiosè nigro-punctulatis. (TAB. NOSTR. III).

Ilex Paraguariensis. *A. St. Hil. Mém. du Mus. d'Hist. Nat. v.* 9. *p.* 351 (1822) *note. De Cand. Prodr. v.* 2. *p.* 15. *A. St. Hil. Voy. dans le district des Diamans et sur le littoral du Brésil, v.* 1. *p.* 273. (1833).

Ilex Maté. *A. St. Hil. Hist. des Pl. les plus remarq. du Brés. et du Parag. v.* 1. *p.* xlj.

HAB. α. Paraguay; this form of the plant also probably in Uruguay and on the banks of the rivers tributary to the Paraguay. Organ Mountains, Brazil; *Mr. Gardner.*—β. Cultivated in the Botanic Garden of Rio; *Dr. Gomez.* —γ. Also cultivated in the Botanic Garden of Rio. (*Herb. Miers.*) Curutiba, Brazil; *A. St. Hilaire.*

Frutex 10-15 pedalis, ubique glaberrimus, ramis obsoletè angulatis. Folia in α. sub-tri—in β. bi—et in γ. non raro 5 et 6 uncias longa, alterna, coriacea, breve petiolata, forma varia, in α. obovata, cuneata, obtusa, rarius sub-acuminata, in β. subangustiora præcipuè supernè, magisque acuta, in γ. oblanceolata seu oblonga, acuminata, supra medium latiora omnia obtusè serrata versùs apicem præcipue, inferne integerrima in petiolum cuneato-attenuata, margine subrecurvata, utrinque venosa, subtùs pallidiora, in β. et γ. magis minusve minutè nigro-punctulatis. *Costa* supra canaliculata, subtùs elevata, valida. *Venatio* utrinque elevata, tenuis; venis patentibus suboppositis intra marginem arcuatìm unitis et totâ superficie reticulatim venulosa. *Petiolus* semiunci longus, crassiusculus, supra canaliculatus, subtùs angulat *Racemi* compositi, axillares, solitarii, foliis duplo tripl breviores: pedicelli breves, subtriflori. *Flores* termin copiosiores, subumbellati. *Bracteæ* parvæ, acutæ, ad ba singuli pedicelli; nunc etiam bini infra medium pedicellor ultimorum. *Calyx* 4-lobus, lobis profundis, rotundatis, bricatis, extus pubescentibus. *Corolla* alba, rotata: tı brevi, laciniis 4, rotundatis, patentibus, concavis. *Stam* 4, lobis alternantia, tubo inserta. *Filamenta* bre *Antheræ* ovales, flavæ. *Ovarium* parvum, disco carnoso positum. *Stigma* minutum, obscurè 4-lobum. *Dr* globosa, magnitudine granæ piperis, calyce persistente l cincta, stigmate 4-lobo terminata, siccitate 4-vel subocto- cata, tetrapyrena: pyrenis oblongo-triquetris utrinque a tiusculis, rugosis.

Reference to the figures:

Tab. I. *Ilex Paraguayensis*, *a.* from Paraguay. *Fig.* Drupa, with its persistent calyx and crowned with the 4-lol stigma; *f.* 2. the same, with the fleshy substance partly moved to show the 4 nuts; *f.* 3. Nut: *all magnified.*

Tab. II. Represents the Maté-cup and tube (drawn fr one in the possession of Lady Callcott).

Azara, who wrote forty years ago, gives an interesting account of the *Herbe du Paraguay*; but offers no remark upon the botanical affinities of it; and his editor, M. Walckenaër, nine years later, falls into the strange blunder of considering it identical with the *Culen* of Chili (*Psoralea glandulosa*), simply, as it would appear, because the *Culen* is drunk as tea by the Chilenos. His history is no doubt in other respects faithful.

"The tree, which produces the *Paraguay Tea,* is found growing wild, among others, in all the woods which border those rivers and streams that fall into the Paranà and Uruguay; and also on the shores of those whose waters join with the river Paraguay, towards the north-east. I have seen several of these trees, equalling in size a tolerably large apple tree. But in those situations, where the leaves are regularly gathered, the parent plant only forms a shrub, because it is periodically stripped of all its foliage and small branches every second or third year—never oftener, however, as this interval is found needful for permitting the leaves to attain perfection, as they do not drop off in winter. The trunk is about the thickness of a man's thigh, with a shining and whitish bark, and branches, which, like those of a laurel, grow pointing upwards to the sky; and the whole plant has a tufted and much branched appearance."

To prepare the "*Herb of Paraguay,*" (as the shrub which yields their favourite beverage is called, *par excellence*, by the natives of this country), the leaves first are slightly scorched, by passing the branches quickly through the flame of fire. The foliage is then roasted and broken down to a certain degree, and also subjected to strong pressure for a time, as the flavour is thought to improve by keeping. The Jesuits, who paid much attention to the culture and preparation of *Paraguay Tea,* were accustomed to remove carefully any little twigs that might be found among the foliage, and to break the leaves much smaller than was the practice of the natives. The article which they produced, was called *Caa-miri*; but the excellencies of its quality were not attributable to these precautions, and many persons prefer the less pulverized leaf; the principal point is to have the foliage thoroughly singed and roasted, and to gather it at a suitable season, when the air is not impregnated with damp.

Azara farther mentions that two kinds of *Paraguay Tea* are made, the *mild*, or *choice*, (*eletta*) and the *strong* (*fuerte*) Paraguay and the province of La Plata consume all the first the latter is exported to Potosi, Peru, Chili, and Quito.

In Brazil, the *Maté Tree*, also called there *Congonha*, is found. It grows abundantly near Curutiba, in the Province of St. Paul, and at Paranagua, an adjoining port; and thence, when political circumstances cut off all communication between Buenos Ayres and Montevideo, with Paraguay the inhabitants of those cities obtained their supply of this favourite leaf. The Spanish Americans, perceiving the difference between the *Maté* obtained in Paraguay, and that of Brazil, imagined that they were not the produce of the same tree, but a careful examination and comparison of authentic specimens enabled M. Auguste St. Hilaire, to assure the Brazilian authorities of their specific identity, and he was afterwards more firmly convinced of this fact, by examining the plantations of Paraguay Tea originally reared to incur any such risks in order to disseminate the *Maté* throughout the Brazilian States. Care in the preparation of the foliage, and the same process as is pursued in Paraguay, will do away with all the difference between the original *Yerba*, and the produce of the same shrub in Curutiba.

The widely extended use of *Paraguay Tea*, and the great and increasing quantity consumed in South America, may well render its culture an object of attention; and the possession of extensive plantations thus becomes highly desirable. At every meal, and at every hour of the day, is *Maté* drunk, and the expense of bringing it to La Assumption doubles its original cost in the woods of Paraguay. The mode of using it, is to infuse a handful of the pounded foliage in a small spouted vessel, called a *Maté* (whence the plant derives its name), and to suck it hot through the tube, which is termed a *Bombilla*, and is perforated on the lower side at the end, with small holes, to prevent the escape of the soaked leaves which float on the top. The infusion must be made with fresh water each time, and drunk off immediately, or the liquor becomes as black as ink; but the leaves will bear to be steeped at least thrice.

The whole party is supplied by passing the *maté cup* from hand to hand, or rather from mouth to mouth, and the repugnance of Europeans to drinking thus indiscriminately after persons, so generally affected with filthy diseases as the South Americans, has given rise to the custom of putting small glass tubes into the spout of the *maté cup*, and sometimes each individual present brings his own tube. The *maté cup** is often made of a calabash, mounted with silver, and fixed on a stand; or of silver itself, elegantly chased and carved. Some persons add a lump of burnt sugar or a few drops of lemon juice to the beverage.

Three kinds of this tea are prepared and vended in South

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* See our Tab. II, where is a representation of a *maté cup*, in the possession of Lady Callcott. The tube is represented a little shortened, in order to introduce its upper extremity or mouth into the figure.

America, which pass under the names of *caa-cuys*, *caa-miri*, and *caa-guazu*: the prefix *caa*, signifying the leaf itself. The former consists of the half-expanded buds; it will not keep, and is entirely consumed in Paraguay: the *caa-miri* is the leaf, as prepared by the Jesuits, carefully picked and stripped from the nerves before roasting, while the third* is made by roasting the foliage without any preparation; the two latter kinds are exported as far as Lima and Quito, the aromatic bitterness which resides in the freshly gathered leaf being much dissipated by carriage. About 50,000 quintals of *Paraguay Tea*, equivalent to 5,600,000 of pounds weight, are annually exported from Paraguay.

Wilcocke, in his "History of the Republic of Buenos Ayres," informs us that "the principal harvest of the herb is made in the eastern part of Paraguay, and about the mountains of Maracaya, where it is cultivated in the marshy valleys which intervene between the hills, and never on the eminences themselves."

Many and highly various, nay contradictory, are the virtues which the South Americans fondly attribute to the use of this their favourite drink. It is certainly aperient and diuretic; but its other qualities are more problematical;

infuse and imbibe before each meal, and sometimes much oftener, never tasting food unless they have first drunk their maté.

From the recent work of Mr. Robertson, called "Francia's Reign of Terror, or Paraguay as it is," we extract the latest account of the mode of collecting the *Yerba de Paraguay*. "Near a small miserable town, bearing the imposing name of Villa Real, are situated the principal *yerbals*, or *woods of the Yerba Tree*, about a hundred and fifty miles higher up the Paraguay river than Assumption. So impenetrable and in many parts overrun with brushwood, are these forests, and everywhere so tenanted with reptiles and insects of a venomous description, that the only animals capable of being driven through them, are oxen and mules; the former, necessary for the food of the colony of *yerba makers*, and the latter indispensible to the conveyance out of the woods of the *tea*, after it has been manufactured and packed. These poor beasts are so tortured with the bites of mosquitos, as to yell dreadfully when driven along, and the Peons, or slaves who ride the mules, have their legs cased in raw hides, faces visored in tanned sheepskin, and hands protected by gloves of the same material. The party generally consists of from twenty to fifty souls, and is collected together by the merchant, who has obtained permission from the Governor to cut the leaves, and who immediately notifies in public his intention in those districts where the natives reside who best understand the business. The merchant comes, provided with goods, mules, hides, *matchetes* (or hatchets), and a few axes, and he gives the persons whom he engages a certain quantity of articles in advance, on credit. Thus equipped, they set off in the direction of the *Forests of Yerba*. When bivouacking at night, a high stage is erected, fifteen feet from the ground, whereon a roof is laid, and where the whole colony sleep, "*para evitar los mosquitos*," which never rise so high in the air, and also to be safe from the yaguars and noxious reptiles which swarm in the forests. When they come to a *yerbal*, or forest of *maté trees*, sufficiently large to make it worth their while to halt and collect the le they begin by constructing a long line of wigwams, co with the broad leaves of the *Banana* and *Palm*, beı whose shade they expect to pass nearly six months. next process is to prepare the piece of ground, on whicl small branches, twigs and leaves of the *yerba* are scorched. The soil is beaten with heavy mallets, till i comes hard and smooth, and the leaves* when thoroı dried, are thither carried and placed on a kind of arch, ı of hurdles, and called a *Barbaqua*. A large fire is kep beneath, and the foliage thoroughly scorched, without l suffered to ignite; after which, the dry platform is s perfectly clean, and the leaves are beaten off the brar by means of sticks, and reduced nearly to powder. Each is assisted by a boy called a *Quayno*, who receives, in ment for his services, the proportion of two pounds of le for every twenty-five pounds which he helps to clear fron branches. Mr. Robertson informs us, that a rude m generally now substituted for this part of the human lal where the scorched foliage and slender twigs are tog ground to powder, thus completing the process, and rer ing the *Paraguay Tea* fit for use. It is then conveyed leaves are considered to be obtained; but even from the same magazine or *Perchel*, the quality greatly varies, which arises from the labourers working in all sorts of weather, and when this is wet, the leaf is consequently inferior. Each Peon can collect as much *Yerba* in a day, as will produce eight arrobas, or 800 lbs. in weight of the prepared Tea. The selling price of the article enables his employer to give the labourer about a shilling each *Arroba*, and as the poor fellows are generally very industrious, and capable of enduring great fatigue and privation, they commonly make as much as eight shillings a day during the six months of Yerba gathering. By the ruinous practice, however, of gambling, to which master and man in South America are alike addicted, it seldom happens that either the merchant who collects and prepares Paraguay Tea, or the Peons who work for him, are otherwise than in continual distress and difficulties."

Ever since the beginning of the 17th century, this plant has been in common use throughout Paraguay, and there can be no doubt but that the Indians of Monda taught the practice of imbibing the infusion to their conquerors, since they were the natives who lived in the vicinity of the forests of Maté. Many of the Creoles and Mestizos now assert that the Paraguayians have exterminated the poor Indians, by compelling them to work at collecting this plant.

By the Jesuits, large plantations of the *Ilex Paraguayensis* were set in the vicinity of all their towns and settlements, a harmless method of gaining the good-will, by adding to the comforts and indulgences of their converts; but their practice has been too little followed, nor has government adopted the requisite salutary precautions and regulations that are needful for the preservation and propagation of so valuable a Tree. It would be desirable that its culture were extended, for only to carry the *Paraguay* Tea to Assumption, 150 miles, doubles, as before mentioned, its primary cost. At present, the *Yerbals* are situated in deserts, or surrounded with tribes of savages, who frequently attack and murder the labourers, already, through the nature of their employment, exposed to hardship and liable to contract disease. By the formatio of plantations round the civilized parts of the country, a improved method of collecting the leaves might also b adopted, the women and children could help in gatherin and the ruinous method of tearing off the branches, by whic the tree frequently perishes, might be avoided.

BOTANICAL INFORMATION.

New British Plants.

We have received from Francis Whitla, Esq., of Belfas a very fine *Equisetum*, hitherto unnoticed as British, the *E* *elongatum* of Willdenow; a southern plant, indeed, but which, as is well known to be remarkably the case with som other plants that had been supposed to be peculiar to warme skies, the range has extended to Ireland. Mr. Whitla foun it in mountain glens near Belfast. Schlechtendal, wh had given an excellent figure of it, in his "Adumbrati Filicum in Promontorio Bonæ Spei provenientium," fro Cape of Good Hope specimens, thus characterizes it:

"*E. elongatum*; frondibus subduplicato-ramosis, ramis sul and ramification, and elongated teeth of the sheaths, and the apiculus to the spikes be considered, it cannot be confounded with any other of our native species.

In Ireland, likewise, Mr. D. Moore, of the Glasnevin Botanical Garden, has been equally fortunate among the *Charæ* as Mr. Whitla has proved to be among the *Equiseta*; for in a recent botanical excursion (in August 1841), his researches were rewarded, as they have often been before by the discovery of a most remarkable species of *Chara*, which proves to be the—

C. latifolia; caulibus spongiosis scabriusculis, ramulis complanatis basi nudis, articulis foliosis, foliis oblongis planis, baccis nudis sessilibus. "*Willd. in Mag. der Ges. Nat. Freunde, B.* 3."

Willdenow and Meyer, in Linnæa, v. 2. p. 80, speak of it as inhabiting waters near Berlin, whence we possess authentic specimens. The great size, and as Mr. Moore says, the *semi-transparency* of its articulations readily distinguish this species. Together with recent specimens, Mr. Moore was so obliging as to communicate the following accompanying remarks.

"This fine species of *Chara*, which I have no hesitation in stating to be new to Britain, occurred in great abundance in Belvidere Lake, Co. Westmeath, where I collected it in August last. The great size and *semi-pellucid* appearance at once struck me as remarkable. The main branches are striated and covered with raised rough points, as are the first joints of the whorled ramuli, while the remaining portion consists only of one pellucid tube, which is thicker than the lower joint, and ends in a sharp point. The branches of the whorls are again beset with smaller ramuli (not bracteæ), in which respect it differs from all our species in the opaque division. I regret I could not find the species in fruit; neither globule nor nucule was present; though I examined hundreds of specimens in various parts of the lake, where it sometimes covered the bottom to the extent of many square perches; and, what was singular enough, *all* the other species in the opaque division occurred abundantly in the same lake, and were all *in full fruit*—each preserving its respecti character; a circumstance scarcely consistent with the id you have suggested, that many of the supposed species a mere varieties."

We are favoured by H. O. Stephens, Esq., of Bristo with two rare Fungi, one of them entirely new to Britain.

1. Polyporus *nitidus*; effusus confluens flavus, in ambit sterilis sublobatus pallidior, poris rectis subrotundis. *Frie Syst. Mycol.* 1. *p.* 379. Boletus nitidus. *Pers. Obs. My* 2. *p.* 15. *p.* 4. *f.* 1

Hab. On the decaying bark of trees, near Bristol. *H. O Stephens, Esq.*

Although not hitherto found in Britain, the Rev. M Berkeley informs Mr. Stephens that he possesses specimen from British Guiana.

2. Sphæria *lateritia*. Fries.—*Berkeley in Hook. Brit. F v.* 2. *p.* 238. Merulius helvelloïdes, *Sow. Brit. Fung. p.* 40

Hab. Infests the gills of *Agaricus cilicioïdes,* abo Bristol. *H. O. Stephens, Esq.*

Mr. Berkeley, in describing this parasite for the secon volume of the British Flora, was obliged to rest on t authority of Fries for the right determination of the plant

Botanist has not issued from the press since the days of Bernard de Jussieu; yet from the pen of the same talented author there has followed, close upon the last mentioned work, another which scarcely yields to it in interest: namely, the

"*Enchiridion Botanicum exhibens Classes et Ordines Plantarum accedit Nomenclator Generum et Officinalium indicatio.*"

Here, as the title indicates, are besides, the full characters of the Regions, and Sections, (as the Author calls them) and Classes and Orders; an enumeration of the Genera and pretty copious notes on the properties and products of Plants. It is a book that should be in the hands of every Botanical Student, and is amply deserving of his attentive study.

"ENDLICHER'S *Iconographia Generum Plantarum,*" we regret to say, has closed, probably for want of a more liberal support on the part of the public, with the 125th plate and accompanying description. More beautiful or more accurate details of the fructification have seldom been given to the world by any author. Many of them, indeed, are from the pencil of the celebrated Ferdinand Bauer, whose talents as a Botanical draughtsman were only equalled, (scarcely excelled) by his late brother Francis.

A Manuel of the British Algæ, containing Genera and specific descriptions of all the known British species of Sea-weeds and Confervæ, both marine and fresh-water, by the HON. WM. HENRY HARVEY.

In this excellent work, the most complete, perhaps, of its kind that this or any other country can boast, the British Algæ are divided into 26 families, 127 Genera, and nothing can exceed the accuracy with which the specific characters and remarks are drawn up. Useful as the descriptions are to the man of science, the general reader may derive, as well as the Botanist, both amusement and instruction from the Introduction, written, we believe, wholly on board ship, while on his late visit to the Cape of Good Hope, where th author's important official duties happily do not hinder hi from studying the Botany of the vast regions of Souther Africa. We shall quote his remarks on the subject of th locality and the structure of the Algæ.

"The name of *Algæ* is assigned by Botanists to a large group, or *natural class*, of those cryptogamic or flowerless plants, which form the principal and characteristic vegetation of the *waters*. The sea, in no climate, from the poles* to the equator, is altogether free from them, though they abound on some shores much more than others, a subject which will come particularly under notice when we speak of the distribution of their several tribes. Species abound likewise in fresh water, whether running or stagnant, and in mineral springs. The strongly impregnated sulphurous streams of Italy; the eterna snows of the Alps and arctic regions; and the boiling spring of Iceland, have each their peculiar species; and eve chemical solutions, if long kept, produce Algæ. Very few comparatively, inhabit stations which are not submerged o exposed to the constant dripping of water; and in all situations where they are found, great dampness, at least, i necessary to their production. Thus extensively scattere single *cellule* or little bag of tissue, filled with a colouring matter; some are mere strings of such cellules cohering by the ends; others, a little more perfect, exhibit the appearance of branched threads; in others, again, the branches and stems are compound, consisting of several such threads joined together; and, in others, the tissue expands into broad flat fronds. Only the higher tribes show any distinction into stems and leaves; and, even, in these, what appears a stem in the old plant, has already served, at an earlier period of growth, either as a leaf, as in *Sargassum* and *Cystoseira,* or as the midrib of a leaf, as in *Delesseria.* A few exhibit leaves or flat fronds formed of a delicate, perforated net-work, resembling fine lace, or the skeletons of leaves, a structure which is also found among zoophytes. Of those so constructed the most remarkable are the New Holland genus *Claudea,* the East Indian *Dictyurus* (*Callidictyon,* Grev.), and a genus, still unnamed, lately discovered at Port Natal, in South Africa, by Dr. Krauss, which produces fan-shaped fronds, the lower half of which has the structure and colour of *Nitophyllum,* the upper that of the delicate net-work of *Claudea.* Among British Algæ, the only structure analogous to these exists in *Hydrodictyon,* which grows in the form of a perfect net, with regular meshes.

The substance of which the frond consists is as variable as the form. Some are mere masses of slime or jelly, so loose that they fall to pieces on being removed from the water; others resemble, in feel and appearance, threads or silks; some are stiff and horny, others are cartilaginous, or with the aspect and elasticity of gristle; others tough and coriaceous, or resembling leather; while the stems of some of the larger kinds are almost woody. The leaves of some are delicately membranaceous, glossy and transparent; of others, coarse and thick, and either wholly destitute of nerves, or furnished with more or less defined ribs; or beautifully veined. Among the most minute kinds, many (comprising the family *Diatomaceæ*), are cased with organized *silex,* and these cases, which resist the action of fire, are found, in count-less myriads in a fossil state, in many countries, cov miles of ground, or forming mountains, and presenting to naked eye a whitish, powdery substance, known by the of "mountain meal."*

"STEUDEL.—*Nomenclator Botanicus seu Synonymia P tarum Universalis, enumerans Ordine alphabetico no atque synonyma tum generica tum specifica, et a Linnæo recentioribus de re Botanica scriptoribus Plantis pha gamis imposita. Ed.* 2, *ex nova elaborata et aucta.*"

The title fully explains the nature of this useful un taking, which was recently brought to a conclusion in volume, imperial 8vo. This is, however, divided into parts, each of about 850 pages. Steudel rendered esse service to the Botanical student, by the first edition of work, extending to 3,376 Genera, and 39,684 Species. present edition enumerates 6,722 Genera and 78,005 Spe So that the known Flora of the world has been nearly dou in the short space of twenty years. It is a great improve in the present edition that the names of the countries are g which each species inhabits; we could have wished that figures had also been referred to.

2,000 species from the Tenasserim provinces.
1,000 „ from the province of Assam.
1,200 „ from the Himalayan range in the Mishmee country.
1,700 „ from the same great range, in the country of Bootan.
1,000 „ from the neighbourhood of Calcutta.
1,200 „ from the Naga Hills at the extreme east of Upper Assam, from the Valley of Hookhong, the district of Mogam, and from the tract of the Irrawadi between Mogam and Ava.

To these will be added the collection made under the superintendence of Lieutenant Kittoe, in the forests of Cuttack. Steps have been taken to procure additions from the Himalayan range about Darjiling, from the Rajmahal Hills and the coast of Arracan. So that it is confidently expected, that although a great reduction in number will occur on the abstraction of forms common to ten or more of the collections enumerated, the Author's materials will even then exceed those formerly distributed by Dr. Wallich, under the orders of the same great patrons of botanical science.

The publication will be conducted on the principles of Natural Classification, and will include all the undescribed forms, as well as those that may happen at present to be imperfectly known. The attempt will be made to render it as complete in the elucidation of the Natural Families, and the Genera of Plants of British India, as the Author's means will allow. It is not intended that the work should be purely systematic; it will embrace details of structure and formation, and enter into the interesting subject of Botanical Geography.

It will be illustrated by quarto or folio uncoloured Plates, in the best style of Lithography, from Sketches by the Author. The accompanying letter-press will be in octavo; the numbers will appear at irregular intervals.

It would be needless to attach a limit to the publication of such extensive materials; but the Author pledges hims that it shall not be so prolonged as to become a tax on t liberality of subscribers. As it is well known that profit c scarcely be expected from an illustrated Botanical work, it almost superfluous to state, that the production of this wc will depend upon an efficient amount of the Subscripti List.

The Author's intention in presenting to the Scient world this prospectus, is to secure for *himself* the publicati of the materials collected by *himself*, and he feels cc fident that this claim will be recognised by all Europe Botanists.

Arboretum et Fruticetum Britannicum; or the Hardy Tr and Shrubs of Britain, native and foreign, &c., 8 abridged from the large edition in 8 vols. By J. LOUDON, F.L.S., &c.

WE have already borne testimony to the value of t original large edition of this work, of which the present is abridgment, in the 3rd vol. of Taylor's Annals of Nat. H tory. Its extent, and consequent cost, makes it a sea book to many, to whom its contents would yield vast sto the heights at which the different species were collected are commonly indicated; sometimes this is done only by single figures, to show the height of one station; sometimes by two figures, to indicate respectively the lowest and highest habitats. Though it cannot be supposed that the species existed only at the heights at which they chanced to be observed by the travellers, yet these indications suffice to show, in a general way, the changes of the Flora in connection with changes of elevation. This good example has been followed by Meyer, in his account of the plants observed during his Travels about the Caucasian mountains. And within these few years, we have had a flora of the Dovrefield, in Norway, in which the same plan is carried out. (See Bielschmied's German Edition of the Swedish Reports, for 1837, pp. 389, &c.) Several years ago, too, some tables exhibiting the highest and lowest stations of the plants of France were published by the celebrated De Candolle. And other botanical authors have also indicated the range of elevation for several species on the mountains of Europe and in other parts of the globe.

Wahlenberg has mostly taken a different method for showing the connection of plants with altitude. In his admirable floras of Lapland, Northern Switzerland, and the Carpathians, he has first divided the tracts of country, whose plants were to be described, into ascending stages or regions, characterised by the presence or absence, or the predominance, of conspicuous or remarkable species; and the relative heights of the other species are then shown by naming the regions in which they have been observed by him. Several other botanical writers have adopted a similar plan, and worked it out with more or less accuracy and completeness; so that, speaking in general terms, we may say that the heights, absolute or relative, at which plants grow on the mountain ranges of northern and western Europe, (Spain excepted), are tolerably well known. Britain has here been rather behind-hand.

In the small volumes, and the minor papers scattered in the scientific periodicals, which have been written by mysel in relation to this subject, attention has been principall given to the relative altitudes at which the different indig nous plants commence or cease to grow. Thus, in the "R marks on the Geographical Distribution of British Plants an imaginary division of Britain was made into five ascendi regions, (plains, uplands, midlands, sub-alps, alps), and t range of each species was shown approximately in an a pended table, by naming the highest and lowest of the r gions in which it had been observed.

The advantages of this method over the plan of stati absolute heights in figures, are twofold. First, the relati heights are more easily ascertained; for, without any troub of measurement or calculation, a few lists of species ma in ascending and descending mountains, will soon give botanist tolerably accurate notions respecting the compar tive altitudes attained by the more frequent species, or th limits relatively to each other. Thus, by such lists, it wou soon appear that in ascending the Highland mountai *Cytisus scoparius* was lost sight of before *Genista Anglica*, t *Genista* before *Erica Tetralix*, the *Erica* before *Calluna v garis*, the *Calluna* before *Vaccinium Vitis-Idæa*, this *Vac nium* before *Vaccinium Myrtillus*, and the latter before *Sa* *aquilina* always ceases long before *Salix herbacea* appears, as we ascend the hills of Aberdeenshire and Cumberland, we may reasonably infer that the same circumstance will be also found to hold in Caernarvon and Sutherland; and that when we attain the height, be it what it may, at which *Salix herbacea* grows in these two latter counties, we shall see no *Pteris aquilina* or other species which keep below its limits elsewhere. Though certain exceptions do occur, principally with respect to particularly local plants, the rule applies very extensively; and it thus becomes comparatively easy to divide the flora of a country into ascending stages, and to refer each species to its proper stage or stages.

But the absolute heights at which the same species will be found on different hills, and even on different parts of the same hill, are very variable; and, consequently, it becomes requisite to make numerous measurements in different places before we can ascertain either the mean height, or the range of height of any species that is at all widely distributed. If, for instance, the height of one species be ascertained in Sutherland, and that of another in Forfarshire, the results may be the same, and yet the two plants may be such as never appear at the same level, when growing upon one and the same hill. All lists of species, designed to compare the absolute heights attained by them, must therefore relate to a small tract, that is, if intended to be more than general approximations. But if sufficiently numerous measurements can be made at distant points, the averages of the whole will admit of comparison.

In the Edinburgh New Philosophical Journal, some years ago, I gave lists of plants which had been ascertained to grow above 4000, 3000, 2000, and 1000 feet respectively, in the Scottish Highlands. In a general way these lists indicated the floras of so many successive stages of elevation; but they still brought species into the same list or stage which really do never grow near together; much as in a British Flora, we promiscuously group all the species found in Britain, although many of them never associate under the same latitude or elevation. In looking at those list stranger to the botany of the mountains would see *Lon Periclymenum* and *Azalea procumbens* both included in list of species growing between 1000 and 2000 feet, bu could not learn from such tables that the *Lonicera* al ceases several hundred feet in absolute elevation before *Azalea* appears. In afterwards publishing similar list plants seen upon the hills of Cumberland, I adopted narr stages, of 500 feet each, and included only the plants served within a morning walk of Keswick. The ascert range of each species was thus shown with greater preci but of course the lists were still liable to the incongr assemblages above stated, though to a less extent. In present paper, I propose to attempt a nearer approac exactness; first, by limiting attention to a portion onl the Highlands; and secondly, by specifying the rang height for each species singly, with as much precision have been able so ascertain its range. When writing lists in the Edinburgh New Philosophical Journal, I had sufficient *data* for the object here proposed; and thoug lists in question can now be much improved upo respect of precision, I do not pretend, as yet, to give than approximations to truth. In all observations of proved form of a narrow mahogany box, adapted for suspension across the chest or back, by means of a strap passing over one shoulder, and under the opposite arm; the bulb of the thermometer, and the bulb containing the gas, being *both together* at the top of the instrument—an important improvement, since miscalculations are thus avoided, which might otherwise occur through inequality in the temperature of the two bulbs and tubes. The Sympiesometer is an ingenious modification of the barometer, more portable in its dimensions, and the use of which is readily learned by the printed instructions given with it to the purchaser; but some practice is necessary before much reliance can be placed upon its indications, as various causes may affect the results in the hands of a novice. Some of these I will here notice for the benefit of others, having myself formerly felt the want of such suggestions.

There is one considerable objection to the Sympiesometer, which will not apply to the barometer, namely, not admitting of a reversed position in travelling, without great risk of being rendered utterly useless. On this account, it cannot be carried in a portmanteau, nor be safely left in any situation where it is likely to be meddled with by persons unacquainted with its construction and use. And, like most philosophical instruments formed of glass tubes, its fragility makes it very ill adapted for the risks of public conveyances, and of the shakes and knocks almost unavoidable in botanical rambles and scrambles on the mountains. Altogether, this instrument, like many other useful commodities, is often sadly in the way, and felt to be nearly as inconvenient in the light of a travelling companion, as we might suppose an infant likely to prove when without its nurse. Literally, while journeying from place to place, and whilst ascending and descending hills, I carried the Sympiesometer in baby-fashion, except that a strap gave the ordinary support, and the hands were called into use only occasionally, to avoid extra risks of blows and jars.

But let us suppose the risks of travel are passed, and the instrument and its owner safely lodged at a Highlan from whence he can conveniently examine the neighb hills. His first care will be to find or hammer a nail wall of his bed-room, whereon to suspend the Sympieso while out of use. A second nail on the outside of th dow will likewise be found useful, that the indications instrument may be observed at the temperature of the nal air. This little preparation completed, the "lassie' officiates in capacity of chambermaid needs to be mo lemnly enjoined on no account to touch the instru Should she happen not to be overdone with work at the this strong injunction of course arouses an equally inclination to look into the box, for which so much of tionate solicitude is exhibited. I have usually susp the instrument open, that the box may be seen to c only breakable glass tubes, and hence more willin avoided. Besides this, an intimation of the cost of machines, and a broad hint that any lassie who should extremely unfortunate as to break one of them, wou certain never to be married, will prove some prote Such precautions are not always unnecessary. A fri mine had carried a barometer to one of the Highland observed. Occasionally, a rest was made, the strap and instrument taken off, and suspended in the shade of a tree, rock, hollow in the ground, umbrella, or even handkerchief only, if no better shade could be obtained. After allowing the instrument to lose the warmth acquired by personal contact, or from the rays of the sun, notes of the pressure of the atmosphere, of the temperature of the sympiesometer by its attached thermometer, and of the temperature of the air by a separate thermometer, were again written down. If the thermometers were graduated exactly, and sufficient time allowed on such occasions, the attached and detached would show the same temperature, but practically they were frequently different by a degree or two. After making these notes, I again ascended, still writing down the names of plants as they successively came under view; and, on gaining a higher elevation, another stoppage was made, and the process repeated. On attaining the summit of the hill, after such alternate ascents and stoppages, the process of ascertaining the temperature of the air and instrument, and the pressure of the atmosphere, was again repeated; and as complete a list as possible was made of the plants growing close round the summit. On the descent, the same plan was pursued, except that the names of all plants not observed on the summit were duly entered in the note book, in the order of their first appearance, that is, of their highest observed limits along the track passed over. On again reaching the inn, the indications of the thermometers and sympiesometer were a second time taken at the same place.

The results of the excursion appeared in my note book, in the form of a list of mountain plants, their names set down in accordance with their lowest observed stations,—a list of plants seen on the summit,—and a list of all plants seen in descending, their names following each other in accordance with their highest observed stations. At intervals, the column of names was interrupted by the notes taken from the instruments used, and by means of which the height of each resting place could be calculated at leisure. A comparison between the notes taken at the starting place, before and after the ascent of the hill, would usually show whether any and what variation had meantime occurred in the pressure of the atmosphere, and in calculating the heights of the resting places, an approximate allowance could be made for any such variation according to time. I say "usually," because the pressure might have changed in the interval, and have again returned to the same figure by the hour when the second notes were taken at the inn; and in any such case no correction or allowance could be made, because the variation would not appear.

It should be mentioned, that the stoppages were ordinarily made at the first station for any shrub or other plant, whose exact limits I was more particularly desirous to ascertain; and the heights calculated for the resting places were consequently the heights at which such plants were first seen. The heights of the other plants observed between any two resting places, were estimated accordingly as their names in the lists appeared near the one or the other of the two places. It will be obvious from this explanation, that the heights of several species were not very precisely ascertained; and the heights of all are liable to that want of exactness which be-ably extended to all the estimates which involve it. Thus, the estimates of height about Clova, Braemar, and adjacent hills, rest on the accuracy of calling Braemar Castle 1070 feet above the sea, which is the height calculated by Dr. Skene, from barometrical observations.

Nor can it be necessary to tell botanists, that the highest and lowest stations in which I have chanced to see any plant, during brief occasional visits to the mountain tracts, are not likely to be the very highest and very lowest, at which those plants really grow; more especially so, because I have rather sought to be within the true limits, in stating the altitudes, that in case of any inaccuracy in calculation, &c., the figures might be on the right side. Other observers may, therefore, expect to find some of the plants in higher stations than I have here assigned for them; but they will be much less likely to find that I state the upper limits too high, or the lower limits too low.

A reflecting botanist will see that other objects can be combined with these excursions for ascertaining the altitudinal limits of plants. For instance, the temperature of the air being taken at each resting place, a tolerable knowledge of the summer climate of the mountains, in its relation to altitude, may be thus gained incidentally. The detached thermometer is also at hand to try the temperature of springs and lakes; and the knowledge so acquired, will throw light upon the changes of vegetation at different altitudes. The condition of the plants in respect to size and habit, of progress towards maturity, and many other matters of interest to the student of nature, will also pass under his notice, upon which it is needless here to enlarge.

The botanist whose leading object is such as here explained, must unfortunately forego the greatest gratifications of the collector. I have found botanists slow in understanding why a measurer must be an unsuitable companion to the collectors of specimens; but a few words will now make this evident. To preserve the integrity of his sympiesometer and thermometers, he must avoid rocky precipices

and other places where these fragile instruments would
a greater risk of knocks, rubs, or shakes; yet such aı
places most frequented by collectors. For the most part
the relative heights of plants can be more correctly ε
tained on the gradual declivities, table lands, and sum
than amongst rocks and precipices; and thus upon the
least interesting to collectors, the measuring botanist req
to spend his time, making frequent stoppages, and pati
awaiting the gradual equalisation of temperature in hi
struments. So little, indeed, can the two objects be uı
that I have seldom carried more than a small pocket b
six inches in length, lest the sympiesometer should be bı
by a blow from the larger vasculum, such as collectors us
carry strapped over their shoulders. This shunning o
rocks has its disadvantages in another way, as may be
in the subjoined list of altitudes; namely, that the he
of the alpine plants growing on rocks are given vaguely
often understated; because, while carrying the symı
meter, I could seldom scramble up to see how high
were growing.

To return to the more immediate object of the pr
paper. In the annexed list are set down the names of

apply to the name of any one of the places, it seemed unnecessary to repeat it each time. Besides these, some other localities are given in the tabular list, also without the addition of figures, being localities of varying elevation, the exact heights of whose plants I am not able to state with precision; some being high, some being low, but all within a certain range, the supposed medium height of which is shown in the following list of these places :—

Bourd rocks,	3,000 feet, more or less.
Clova table land,	2,700 feet, more or less.
Callater rocks,	2,600 feet, more or less.
Clova rocks,	2,400 feet, more or less.
Clova lower rocks,	2,000 feet, more or less.
Dalwhinnie,	1,200 feet, or upwards.
Castleton,	1,100 feet, or upwards.
Dalnacardoch,	1,050 feet, or upwards.
Glen Clova,	800 feet, or upwards.
Pitmain,	750 feet, or upwards.
Tayhead (Killin),	400 feet, or upwards.
Lochearnhead,	350 feet, or upwards.

I have not named the last place, unless when the plant was seen also at some of the preceding places; and there are other plants about Loch-Earn, which I have not observed more completely among the mountains, and on that account have not added them to the list. Since by far the larger part of the plants whose names do appear in the list, may be found down to the sea level in some parts of Scotland, and a considerable portion are found on the low plains under nearly the same latitude as the Grampian mountains; the inferior limits of those which do not descend so low can be more conveniently shown in a second list; which I reserve for a future communication, the present one being quite as long as the space that can be spared for it in a miscellaneous journal. In a work which is now preparing for the press, I shall treat much more amply on the relations of plants to

altitude; but from the scale on which it is commenc
work in question cannot be all printed before sever
will have elapsed. Meantime, the lists now offered
serviceable to those who take interest in tracing the
tions between the vegetation and the physical geogr
countries.

The abbreviations used will most of them be app
persons who are acquainted with the names and situa
the Highland hills, Ben-na-muic-dhu (sometimes call
mac-dowie) is shortened into Muicdhu; Ben-na-B
written simply Bourd; and the word Ben is omitted
Nevis and Lawers. Cairn signifies the Red Cairn,
ridge opposite the steep precipices on Ben Nevis. I
used to express the mass of mountains near the vi
Killin, and extending from Ben Lawers to the Loc
serrated outline of which rises into distinct peaks k
Craig Chailleach, Ben Cruachpen, Mal Grew, &c.
low grounds about Killin, I have used the name of T
Gnarrow is a hill of about 3000 feet elevation, on t
side, and near the north end of Loch Erricht. Dru
(forest) rises on the eastern side of that Loch, and
crescent of several miles long to the southward of Dal

Salix herbacea	Muicdhu, 4,300. Lawers, 4,000. Cairn, 3,800.
Gnaphalium supinum	Muicdhu, 4,250. Nevis, 4,100. Lawers, 4,000.
Juncus trifidus	Muicdhu, 4,250. Bourd, 3,600. Cairn, 3,500.
Vaccinum Myrtillus	Muicdhu, 4,200. Nevis, 3,800. Lawers, 3750.
Aira alpina, or Aira cæspitosa.	Muicdhu, 4100. Nevis, 4,100. Cairn, 3,700.
Saxifraga stellaris	Nevis, 4,100. Lawers, 4,000. Cairn, 3,800.
Rumex acetosa	Nevis, 4,100. Lawers, 4,000. Cairn, 3,800.
Leontodon palustre	Nevis, 4,100. Lawers, 4000. Cairn, 3,600.
Viola palustris	Muicdhu, 4,100. Nevis, 3900. Lawers, 3,800.
Sibbaldia procumbens	Nevis, 4,100. Lawers, 3,800. Cairn, 3,800.
Alchemilla alpina	Lawers, 4,000. Muicdhu, 4,000. Nevis, 3950.
Oxyria reniformis	Nevis, 4,000. Lawers, 3,900. Cairn, 3700.
Carex rigida	Lawers, 4,000. Cairn, 3,800. Bourd, 3,600.
Poa alpina	Lawers, 4,000. Cairn, 3,800. Killin, 3,300.
Empetrum nigrum	Muicdhu, 4,000. Nevis, 3,500. Bourd, 3,400.
Polygonum viviparum	Lawers, 4,000. Killin, 3,300. Cairn, 3,100.
Achillæa millefolium	Lawers, 4,000. Killin, 3,300. Gnarrow, 2,700.
Cherleria sedoides	Lawers, 4,000. Killin, 3,300. " Clova, 3,000."
Saxifraga oppositifolia	Lawers, 4,000. Killin, 3,300. Clova rocks.
Saxifraga nivalis	Lawers, 4,000. Killin, 3,300. Clova rocks.
Cerastium alpinum	Lawers, 4,000. Killin, 3,250. Clova rocks.
Saussurea alpina	Lawers, 4,000. Killin, 2,450. Clova rocks.
Cochlearia officinalis ?	Lawers, 3,900. Nevis, 3,800. Cairn, 3,700.
Epilobium alpinum	Lawers, 3,900. Nevis, 3700. Cairn, 3,700.
Rhodiola rosea	Lawers, 3900. Nevis, 3,700. Cairn, 3,600.
Ranunculus acris	Lawers, 3,900. Nevis, 3,600. Cairn, 3,600.
Thalictrum alpinum	Lawers, 3,900. Cairn, 3,400. Killin, 3,300.
Saxifraga hypnoides	Lawers, 3,900. Killin, 3,300. Drumochter, 3000.
Oxalis acetosella	Lawers, 3,900. Killin, 3,300. Gnarrow, 2,800.
Saxifraga cernua	Lawers, 3,900.
Draba rupestris	Lawers, 3,900.
Myosotis alpestris	Lawers, 3,900.
Stellaria cerastoides	Cairn, 3,800. Nevis, 3,800. Bourd rocks.
Veronica humifusa	Lawers, 3,800. Cairn, 3,700. Nevis, 3,600.
Galium saxatile	Nevis, 3,800. Cairn, 3,700. Bourd, 3,300.
Statice Armeria	Cairn, 3,800. Bourd, 3,600. Killin, 3,300.
Sagina procumbens	Lawers, 3,800. Killin, 3,250. Drumochter, 2,850.
Veronica alpina	Cairn, 3,700. Bourd rocks. Table land of Clova.
Carex panicea	Muicdhu, 3,700. Drumoch. 2,300. Braemar, 2200.
Aira flexuosa	Bourd, 3,600. Cairn, 3,500. Drumochter, 3,150.
Euphrasia officinalis	Nevis, 3,600. Bourd, 3,400. Killin, 3,250.
Alchemilla vulgaris	Cairn, 3,600. Killin, 3,300. Lawers, 3,200.
Cerastium latifolium	Nevis, 3,600. Lawers, 3,200 (or upwards).

Saxifragia rivulars	Cairn, 3,600. Nevis, 3,000.
Azalea procumbens	Bourd, 3,550. Clova, 2,850. Drumochter, 2,800.
Caltha palustris	Bourd, 3,500. Muicdhu, 3,400. Drumochter, 3000.
Campanula rotundifolia	Cairn, 3,500. Killin, 3,300. Lawers, 3,200.
Thymus Serpyllum	Cairn, 3,500. Killin, 3,300. Nevis, 3,000.
Vaccinium uliginosum	Bourd, 3,500. Muicdhu, 3,300. Drumocht. 3,000.
Eleocharis cæspitosa	Bourd, 3,500. Muicdhu, 3,200. Drumocht. 2,850.
Eriophorum angustifol.	Bourd, 3,500. Drumocht. 3,000. Lawers, 3,000.
Phleum alpinum	Lawers, 3,500. Table land of Clova.
Anthoxanthum odorat.	Bourd, 3,400. Gnarrow, 2,850. Killin, 2,800.
Vaccinium Vitis-Idæa	Killin, 3,300. Bourd, 3,300. Drumochter, 3,000.
Carex pilulifera	Killin, 3,300. Bourd, 3,300. Muicdhu, 2,600.
Chrysosplen. oppositif.	Cairn, 3,300. Lawers, 3,200. Drumochter, 3000.
Cerastium viscosum	Killin, 3,300. Cairn, 3,200. Nevis, 3,000.
Rubus Chamæmorus	Killin, 3,300. Drumocht. 3,000. Muicdhu, 3,000.
Stellaria uliginosa	Cairn, 3,300. Drumocht. 3,000. Killin, 2,800.
Luzula campestris	Killin, 3,300. Bourd, 3,000. Drumochter, 2,800.
Poa annua	Killin, 3,300. Drumocht. 3,000. Clova, 2,750.
Juncus squarrosus	Killin, 3,300. Drumocht. 2,800. Gnarrow, 2,800.
Tormentilla officinalis	Bourd, 3,300. Drumocht. 2,800. Nevis, 2,700.
Nardus stricta	Bourd, 3,300. Cairn, 2,800. Nevis, 2,700.
Arenaria rubella	Killin, 3,300. (higher on Ben Lawers).
Salix reticulata	Killin, 3,300. Clova rocks.
Adoxa moschatellina	Killin, 3,300.
Saxifraga aizoides	Lawers, 3,200. Drumocht. 3,000. Killin, 2,900.
Draba incana	Lawers, 3.200. Killin, 2,900. Clova rocks.
Narthecium ossifragum	Bourd, 3,200. Cairn, 2,500. Muicdhu, 2,300.

Pinguicula vulgaris	Killin, 2,900. Drumocht. 2,800. Clova, 2,800.
Gnaphalium dioicum	Gnarrow, 2,900. Clova, 2,800. Lawers, 2,750.
Carex dioica	Killin, 2,900. Lawers, 2,500. Clova table land.
Carex flava	Killin, 2,900. Drumocht. 2,500. Lawers, 2,400.
Solidago Virgaurea	Drumocht. 2,900. Nevis, 2,500. Aulder rocks.
Carex stellulata	Killin, 2,900. Lawers, 2,400. Drumochter, 2250.
Epilobium alsinifolium	Killin, 2,900. Clova rocks. Above Dalwhinnie.
Anemone nemorosa	Killin, 2,900. Braemar, 2,050. Drumochter, 1,600.
Triglochin palustre	Killin, 2,900. Braemar, 2,050. Dalwhinnie.
Eriophorum vaginatum	Clova, 2,850. Drumocht. 2,850. Muicdhu, 2,500.
Cornus suecica	Gnarrow, 2,850. Drumocht 2,500. Clova, 2,800.
Lotus corniculatus	Clova, 2,850. Drumocht. 2,500. Gnarrow, 2,500.
Geum rivale	Gnarrow, 2,800. Killin, 2,800. Drumochter, 2400.
Arbutus uva-ursi	Drumocht. 2,800. Clova, 2,500. Muicdhu, 2,400.
Trientalis europæa	Drumocht, 2,800. Clova, 2,500. Castleton.
Galium boreale	Killin, 2,800. Clova rocks. Gnarrow, 1,800.
Polygala vulgaris	Clova, 2,800. Bourd, 2,300. Dalwhinnie.
Leontodon Taraxacum	Killin, 2,800. Drumocht. 2,050. Braemar.
Trifolium pratense	Lawers, 2,800. Braemar, 1,700. Dalwhinnie.
Veronica Beccabunga	Clova, 2,800. Castleton. Dalnacardoch.
Bellis perennis	Lawers, 2,750. Killin, 2,700. Dalwhinnie.
Juniperus communis	Clova, 2,750. Muicdhu, 2,650. Bourd, 2,300.
Ranunculus repens	Lawers, 2,750. Killin, 2,500. Dalwhinnie.
Betula nana	Clova, 2,750. Braemar, 1,950. Gnarrow, 1,800.
Menziesia cærulea	" Athole Sow. 2700."
Viola lutea (blue)	Killin, 2,700. Gnarrow, 2,600. Drumochter, 1400.
Viola canina	Killin, 2,700. Bourd, 2,600. Gnarrow, 2,500.
Carex atrata	Lawers, 2,700. Killin, 2,550. " Isla rocks."
Ranunculus Flammula	Lawers, 2,700. Killin, 2,450. Drumochter, 2,250.
Trifolium repens	Killin, 2,700. Lawers, 2,400. Drumochter, 1,700.
Dryas octopetala	Killin, 2,700. Clova rocks.
Veronica saxatilis	Lawers, 2,700. Clova rocks.
Potentilla alpestris	Lawers, 2,700. Clova rocks.
Sesleria cærulea	Killin, 2,700.
Rubus saxatilis	Killin, 2,700. Nevis, 2,200. Drumochter, 1,800.
Betula alba	Nevis, 2,700 (?). Clova, 2,000. Gnarrow, 1,800.
Veronica officinalis	Killin, 2,700. Drumocht. 2,000. Braemar, 1,800.
Agrostis vulgaris	Lawers, 2,700. Gnarrow, 2,000. Drumocht. 1600.
Hieracium Lawsoni	Killin, 2,700. Braemar, 1,950. Drumochter, 1850.
Parnassia palustris	Killin, 2,700. Drumocht. 1,750. Cairn, 1,500.
Veronica Chamædrys	Killin, 2,700. Gnarrow, 1,600. Braemar, 1,600.
Tussilago Farfara	Killin, 2,700. Drumocht. 1,500. Castleton.
Heracleum Sphondyl.	Killin, 2,700. Dalwhinnie, Castleton.
Carex rariflora	Clova, on the table-land.
Carex capillaris	Clova, on the table-land. Killin, 2,250.

Carex aquatilis . . .	. Clova, on the table-land.
Alopecurus alpinus .	. Clova, on the table-land.
Spergula saginoides	. Clova, on the table-land.
Vaccinium Oxycoccos	. Clova, on the table-land Bourd, 2,000.
Arbutus alpina . .	. " Clova, on the table-land." Cairn, 1,900.
Carex pauciflora . .	. Clova, on the table-land. Muicdhu, 1,800.
Carex vesicaria ? .	. Clova, on the table-land.
Comarum palustre .	. Clova, on the table-land. Drumochter, 1,800.
Listera cordata . .	. Clova, on the table-land. Braemar, 1,700.
Carex cæspitosa . .	. Clova, 2,500. Killin, 2,450. Lawers, 2,400.
Scabiosa succisa . .	. Cairn, 2,500. Drumocht. 2,400. Braemar, 1,950.
Pyrus Aucuparia .	. Clova, 2,500. Bourd, 2,100. Drumochter, 1950.
Melica cærulea . .	. Muicdhu, 2,500. Bourd, 2,100. Above Dalwhin.
Poa trivialis . . .	. Killin, 2,500. Drumocht. 2,100. Castleton.
Urtica dioica . . .	. Killin, 2,500. Drumocht. 1,500. Castleton.
Stellaria media . .	. Killin, 2,500. Drumocht. 1,500. Castleton.
Carex pulicaris . .	. Killin, 2,450. Drumocht. 2,400. Cairn, 2,300.
Lysimachia nemorum	. Killin, 2,450. Clova, 2,000. Gnarrow, 1650.
Carex binervis . .	. Cairn, 2,400. Bourd, 2,400. Drumochter, 1800.
Juncus effusus . .	. Lawers, 2400. Drumocht. 2,200. Bourd, 1,950.
Juncus uliginosus .	. Lawers, 2,400. Muicdhu, 2,100. Braemar, 2,050.
Linum catharticum .	. Killin, 2,400 Drumocht, 1,900. Braemar, 1,700.
Cnicus palustris . .	. Drumocht. 2,400. Bourd, 1,850. Gnarrow, 1,700.
Rhinanthus Crista-galli	Muicdhu, 2,400. Braemar, 1,700. Dalwhinnie.
Astragalus alpinus .	. Clova rocks.
Erigeron alpinus .	. Clova rocks. High on Ben Lawers.
Carex Vahlii . . .	. " Clova rocks." " Callater rocks."

Senecio Jacobæa	Braemar, 2,050. Lawers, 1,300. Dalnacardoch.
Gymnadenia conopsea	Braemar, 2,050. Dalnacardoch. Glen Clova.
Drosera rotundifolia	Muicdhu, 2,000. Drumocht. 1,900. Nevis, 1,800.
Subularia aquatica	Small loch, considerably above L. Callater (2,000?)
Oxytropis campestris	Clova, on the lower rocks, about 2,000.
Linnæa borealis	Clova, on the lower rocks. Killin, 600.
Arabis hirsuta	Clova, on the lower rocks.
Stellaria holostea	Clova, on the lower rocks. Braemar, 1,400.
Rosa mollis	Clova, on the lower rocks. Gnarrow, 1,500.
Pedicularis sylvatica	Braemar, 1,950. Muic., 1,900. Drumocht 1850.
Digitalis purpurea	Braemar, 1,950. Clova, 1,550. Drumochter, 1500.
Cytisus scoparius	Braemar, 1,950. Clova, 1,550. By L. Ercht. 1400.
Rubus Idæus	Braemar, 1,950. Drumocht. 1,500. Clova, 1,200.
Vicia sepium	Braemar, 1,950. Clova, 1,500. Dalnacardoch.
Habenaria albida	Muicdhu, 1,950. Dalwhinnie. Dalnacardoch.
Salix fusca	Braemar, 1,950. Dalwhinnie. Clova.
Carex pallescens	Braemar, 1,900. Clova, 1,200. Dalwhinnie.
Carex recurva	Braemar, 1,900. Dalnacardoch. Clova.
Hieracium paludosum	Drumocht. 1,850. Castleton. Clova.
Pyrola media	Gnarrow, 1,800. Braemar, 1,800. Drumoch. 1750.
Avena pratensis	Braemar, 1,800. Drumocht. 1,800. Clova, 1,700.
Prunella vulgaris	Gnarrow, 1,800. Braemar, 1,750. Drumoch. 1600.
Plantago lanceolata	Braemar, 1,800. Drumocht. 1,500. Clova. 1,200.
Drosera anglica	Muicdhu, 1,800.
Spergula subulata ?	Drumocht. 1,800.
Angelica sylvestris	Drumocht. 1,750. Gnarrow, 1,500. Clova, 1,000.
Triodia decumbens	Lawers, 1,700. Braemar, 1,600. Dalnacardoch.
Myrica Gale	Drumoch. 1,700. Gnarrow, 1,500. Braemar, 1,400.
Cnicus lanceolatus	Gnarrow, 1,700. Clova, 1,500. Castleton.
Vicia sylvatica	Clova, 1,700. Braemar, 1,400. Dalnacardoch.
Galium verum	Braemar, 1,700. Dalnaspidal 1350. Dalwhinnie.
Briza media	Braemar, 1,700. Clova, 1,200. Dalwhinnie.
Hypochæris radicata	Braemar, 1,700. Dalwhinnie. Dalnacardoch.
Helianthemum vulgare	Braemar, 1,700. Dalwhinnie. Dalnacardoch.
Anthyllis vulneraria	Braemar, 1,700. Dalwhinnie. Dalnacardoch.
Pimpinella saxifraga	Braemar, 1,700. Dalnacardoch. Glen Clova.
Rumex Acetosella	Drumocht. 1,700. Glen Clova. Tayhead.
Hieracium Pilosella	Braemar, 1,600. Drumocht. 1,550. Lawers, 1,300.
Populus tremula	Braemar, 1,600. Gnarrow, 1,500. Dalnacardoch.
Ranunculus auricomus	Braemar, 1,600. Probably higher, near Killin.
Gentiana campestris	Braemar, 1,600. Dalwhinnie. Dalnacardoch.
Bunium flexuosum	Braemar, 1,600. Clova, 1,200. Dalwhinnie.
Hieracium sylvaticum	Drumocht. 1,600. Castleton. Clova, 1,000.
Lathyrus pratensis	Drumocht. 1,600. Castleton. Glen Clova.

Menyanthes trifoliata	Clova, 1,550. Drumocht. 1,450. Killin, 750.
Pedicularis palustris	Lawers, 1,550. Dalwhinnie, Castleton.
Epilobium angustifol.	Braemar, 1,500. Drumoch. 1,500. Gnarrow 1500
Rumex crispus ?	Drumocht. 1,500. Clova, 1,500. Tayhead *(certè)*
Primula vulgaris	Braemar, 1,500. Gnarrow, 1,450. Dalnacardoch.
Alnus glutinosa	Gnarrow, 1,500. Castleton. Dalnacardoch.
Corylus Avellana	Clova, 1,500. Castleton. Dalnacardoch.
Valeriana officinalis	Drumocht. 1,500. Castleton. Glen Clova.
Achillæa Ptarmica	Drumocht. 1,500. Castleton. Glen Clova.
Poa fluitans	Drumocht. 1,500. Castleton. Glen Clova.
Veronica scutellata	Drumocht. 1,500. Castleton.
Holcus lanatus	Drumocht. 1,500. Castleton. Glen Clova.
Geranium Robertianum	Clova, 1,500 Dalnacardoch. Tayhead.
Carex fulva	Drumocht. 1,500. Glen Clova. Tayhead.
Carex ovalis	Drumocht. 1,500. Glen Clova. Lochearnhead.
Aira præcox	Drumocht. 1,500. Glen Clova. Tayhead.
Carex ampullacea	Drumocht. 1,500. Killin, 700.
Trifolium filiforme ?	Drumocht. 1,500. (Prob. introd. No flowers).
Juncus acutiflorus	Killin, 1,400. Lawers, 1,200. Dalwhinnie.
Aira caryophyllea	Braemar, 1,400. Dalwhinnie. Dalnacardoch.
Plantago maritima	Nevis, 1,400. Loch Ericht, 1,200. Tayhead.
Potamogeton rufescens ?	Drumocht. 1,400.
Cnicus heterophyllus	Drumocht. 1,300. Castleton. Glen Clova.
Fragaria vesca	Clova, 1,200. Dalwhinnie. Dalnacardoch.
Rosa canina ?	Lawers, 1,200. Castleton. Dalnacardoch.
Lonicera Periclymenum	Clova, 1,200. Dalnacardoch. Tayhead.
Capsella Bursa	Dalwhinnie. Castleton. Dalnacardoch.

quaticus	Dalwhinnie. Pitmain. Tayhead.
rens	Dalwhinnie. Castleton.
ilosa	Dalwhinnie. Castleton. Tayhead.
bufonius	Dalwhinnie. Dalnacardoch. Glen Clova.
onglomeratus?	Dalwhinnie. Dalnacardoch.
is pauciflora	Dalwhinnie. Dalnacardoch.
tata	Dalwhinnie. Glen Clova Pitmain.
us geniculatus	Dalwhinnie. Castleton. Dalnacardoch.
us pratensis	Dalwhinnie. Castleton. Glen Clova.
ensis	Dalwhinnie (?) Dalnacardoch.
duriuscula	Dalwhinnie. Dalnacardoch. Glen Clova.
color	Castleton. Dalnacardoch. Glen Clova.
m vulgatum	Castleton. Tayhead.
arvensis	Castleton. Dalnacardoch. Pitmain.
opæus	Castleton, introduced ? Glen Clova.
a medium	Castleton. Dalnacardoch.
Padus	Castleton. Dalnacardoch.
a anserina	Castleton. Glen Clova. Tayhead.
a Fragariastr.	Castleton.
lpina	" Woods near Castleton." Tayhead.
rossularia	Castleton. Tayhead. (Introduced to both ?)
thamanticum	Castleton. Glen Clova.
m murorum ?	Dalwhinnie. Castleton.
oleraceus	Castleton.
acanthoides	Castleton. (probably introduced).
rvensis	Castleton. Glen Clova. Pitmain.
aquaticus	Castleton. Glen Clova Tayhead.
sylvaticus	Castleton. Glen Clova. Pitmain.
hemum Leuc.	Castleton. Dalnacardoch. Pitmain.
ninor	Castleton.
s arvensis	Castleton.
s cæspitosa	Castleton. Dalnacardoch. Glen Clova.
s arvensis	Castleton. Dalnacardoch. Glen Clova.
arvensis	Castleton. Glen Clova. Tayhead.
palustris	Castleton. Glen Clova. Tayhead.
purpureum	Castleton.
m Scorodonia	Castleton. Tayhead.
o major	Castleton. Dalnacardoch. Glen Clova.
um Convolv.	Castleton. Lochearnhead.
obtusifolius	Castleton (?) Pitmain. Tayhead.
alis perennis	Castleton. Dalnacardoch. Tayhead.
bia Peplus	Castleton
s Lupulus	Castleton. (only a single plant).
—— ?	Castleton. Tayhead. Loch Lubnaig.

Holcus avenaceus . .	Castleton. Dalnacardoch. Tayhead.
Bromus mollis . . .	Castleton. Dalnacardoch. Pitmain.
Lolium perenne . .	Castleton. Dalnacardoch. Glen Clova.
Ranunculus bulbosus .	Dalnacardoch. Pitmain.
Raphanus Raphanistr.	Dalnacardoch. Glen Clova. Pitmain.
Stellaria graminea . .	Dalnacardoch. Tayhead.
Geranium molle . .	Dalnacardoch Lochearnhead.
Vicia sativa	Dalnacardoch.
Rubus suberectus . .	Dalnacardoch(?) Glen Clova. Pitmain.
Epilobium montanum	Dalnacardoch. Glen Clova. Tayhead.
Scleranthus annuus .	Dalnacardoch. Glen Clova.
Ribes nigrum . . .	Dalnacardoch. (Introduced ?)
Galium palustre . .	Dalnacardoch. Glen Clova. Pitmain.
Crepis tectorum (Sm.)	Dalnacardoch. Tayhead.
Veronica serpyllifolia	Dalnacardoch. Glen Clova. Tayhead.
Veronica arvensis . .	Dalnacardoch. Glen Clova. Pitmain.
Stachys sylvatica . .	Dalnacardoch.
Ulmus montana . .	Dalnacardoch. (Introduced).
Habenaria bifolia . .	Dalnacardoch. Glen Clova. Pitmain.
Juncus lampocarpus .	Dalnacardoch. Tayhead. Lochearnhead.
Cynosurus cristatus .	Dalnacardoch. Glen Clova. Pitmain.
Dactylis glomerata .	Dalnacardoch. Tayhead. Lochearnhead.
Cratægus Oxyacantha	Killin, 1,150. Lochearnhead.
Ilex Aquifolium . .	Clova, 1,000.
Lychnis Flos-cuculi .	Glen Clova. Tayhead. Lochearnhead.
Silene inflata . . .	Glen Clova.
Geranium phœum .	Glen Clova. (Probably introduced).

Sparganium natans	Lawers, 600.
Ribes petræum	Loch Dochart, about 600.
Corydalis claviculata	Tayhead.
Stellaria nemorum	Tayhead.
Hypericum hirsutum	Tayhead.
Hypericum humifusum	Tayhead.
Geranium pratense	Tayhead.
Geranium dissectum	Tayhead. Lochearnhead.
Trifolium procumbens	Tayhead.
Pyrus Malus	Tayhead.
Prunus spinosa	Tayhead. Lochearnhead.
Geum urbanum	Tayhead.
Alchemilla arvensis	Tayhead.
Torilis Anthriscus	Tayhead.
Ægopod. Podagraria	Tayhead. Lochearnhead.
Myrrhis odorata	Tayhead.
Viburnum Opulus	Tayhead.
Galium Aparine	Tayhead.
Arctium Lappa	Tayhead.
Hieracium subaudum	Tayhead. Lochearnhead.
Tanacetum vulgare	Tayhead.
Scrophularia nodosa	Tayhead. Lochearnhead.
Galeopsis versicolor	Tayhead. Lochearnhead.
Littorella lacustris	Tayhead.
Chenopodium album	Tayhead.
Iris Pseudacorus	Tayhead. Lochearnhead.
Holcus mollis	Tayhead.
Festuca elatior	Tayhead. Lochearnhead.
Poa nemoralis	Tayhead.
Triticum repens	Tayhead.
Phleum pratense	Tayhead.
Melampyrum sylvat.	Woods above Loch Tay.

To the preceding list of four hundred species, some fifty or sixty others might be added, which I have not seen in their native places of growth, and consequently cannot speak with any certainty about the altitudes at which they may be found. Some of these are very dubious as species; others have not been gathered by any now living botanist in this country; while the remainder, with one or two exceptions, are so extremely local, that few botanists have ever seen them. Nearly all of them, probably, grow between 2,000 and 3,000 feet, that is, if they grow at any height; but so of the willows and grasses may be lower only. The followi list includes most of these plants.

Ranunculus alpestris	Clova Mountains.
Draba verna, var.	Near the lake, on Ben Lawers.
Thlaspi alpestre	Rocks in Glen Isla.
Arabis ciliata	Rocks in Glen Esk.
Stellaria scapigera	Hills northward of Dunkeld.
Arenaria fastigiata	Rocks on the Clova Mountains.
Arenaria verna	Mael Duncrosk, near Killin.
Rubus arcticus	Ben-y-glo, near Glen Tilt.
Potentilla opaca	Braes of Balquidder.
Potentilla tridentata	Mountains eastward of Clova, &c.
Sedum villosum	Halfway up Ben Lawers.
Saxifraga cæspitosa	Ben Lawers.
Saxifraga pedatifida	Rocks in Glen Clova.
Hieracium cerinthoides	Rocks in Glen Clova.
Hieracium amplexicaule	Rocks on the Clova Mountains.
Bartsia alpina	Malghyrdy. Ben Lawers.
Veronica fruticulosa	Ben Lawers.
Ajuga alpina	Clova Mountains. Glen Isla.
Salix ——	About 25 reputed species.
Juncus tenuis	Summits of Clova Mountains.
Juncus capitatus	Highest parts of Ben Lawers.
Eriophorum alpinum	Ben Lawers.

Description of TROCHOPTERIS, *a new Genus of Ferns.*

By GEORGE GARDNER, ESQ.

(*With a Plate*, Tab. IV.)

ALTHOUGH Brazil has been long famous for the number of its Ferns, it is not perhaps generally known, that by far the greater part of them are confined to a limited tract of that great empire. The centre of this tract is the dense and humid forests which exist on the mountains, in the immediate neighbourhood of Rio de Janeiro; the still denser ones which cover the lower regions of the Organ Mountains; and those of the continuations of that chain which stretch towards the S.W. and the N.E. Shade and humidity, combined with heat, being the principal requisites for their growth, it is only where these exist that Ferns abound. The northern and inland provinces are for the most part composed either of immense Campas, as in the province of Piauhy in the north, and Goyaz in the west, which towards the end of the dry season, become little better than arid deserts; of districts a little more elevated covered with low woods, which in the dry season throw off their leaves, and present the same appearance which the woods of cold climates do in winter—heat effecting in the one instance what cold does in the other;—or of tracts of upland, undulating, sterile, rocky, or grassy country, as in the Gold and Diamond districts. These parts of Brazil consequently afford but few ferns, although all of them are otherwise very rich in botanical productions. This, also, explains why later travellers in Brazil have found so few new ferns in comparison with those who first visited the country.

During the few months, however, which I passed in the neighbourhood of the Villa de Natividade in the north of the province of Goyaz, I was fortunate enough to discover several very interesting species, among which, besides the one now about to be described, I may mention four species of *Adiantum*, a *Nothochlæna*, a *Cassabeera*, a *Trichomanes*, a very small *Acrostichum*, two species of *Cheilanthes*, and about half a dozen kinds of *Anemia*. All of these, with perhaps two or three exceptions, are undescribed species. Two of the *Anemiæ* are very remarkable from the very great subdivision of their barren fronds, those of one of them—*Anemia Millefolium*, Gard. MSS. No. 4083—very much resembling the leaves of *Achillæa Millefolium*. Figures and descriptions of this and the other species—*A. dichotoma*, Gard. MSS. No. 4084—will shortly appear in the forthcoming number of Hooker's Icones Plantarum. The greater part of these were found on the Serra de Natividade, a rocky mountain range nearly destitute of wooded vegetation, which rises about 2000 feet above the level of the plain in which it is situated.

TROCHOPTERIS.

CHAR. GEN. *Sporangia* ovata, in laciniis loborum 2 inferiorum frondis biseriatim disposita, basi vasculoso-reticulata, vertice ad medium complete annulata, hinc longitudinaliter dehiscentia. *Indusium* nullum. *Sporulæ* triangulares, striatæ, scabrellæ.—Filicula *Brasiliensis ;* fronde *fere unciali, pilosa,* 5-*lobata, lobis* 2 *inferioribus laciniato-sectis, laciniis soriferis, lobis reliquis integris sterilibus.*

reticulata, e vertice ad medium annulata, radiatim striata, extrorsum longitudinaliter dehiscentia. *Sporulæ* triangulares, striatæ, sub lente minutissimè scabrellæ.

Nomen ex *τροχος rota* et *πτερις filix*, dispositionem frondis indicans.

This curious and elegant little fern belongs to the tribe *Schizeaceæ*, to all the genera of which it is very closely related; but to *Anemia* it bears the greatest affinity, and, indeed, it can only be distinguished by its very different habit. Its peculiarity in this respect is, however, I conceive quite sufficient to constitute it as good a genus as many which have lately been established in the now extensive family to which it belongs. In *Anemia* there are always two kinds of fronds—the barren and the fertile. These either arise distinctly and separately from the rhizoma, as in *A. aurita*, Sw., my two new species above referred to, and others belonging to the same division; or a union of the stipes of two fertile fronds with a barren one takes place, as in those species which appear to have their fertile spikes formed from the lower leaflets of a barren frond. That such is the correct view of the manner in which fructification takes place in *Anemia*, and not that the sporangia are produced upon a changed portion of the frond, as Endlicher and others suppose, is, I think confirmed by the fact of the fertile fronds sometimes arising separately from the rhizoma, and not differing in general appearance from the barren ones; and this is made more evident when we sometimes find the lower half only of the spike bearing sporangia, the upper being a perfect facsimile of the same portion of the barren fronds. Again, in the other division of the genus, such as in *A. Mandioccana*, Raddi, we find the two fertile spikes placed opposite to each other, which would not be the case were they modified leaflets, for these are always alternate.

In *Trochopteris* the fructification is produced in a very different manner. In it there is only one kind of frond—a simple one, generally divided into five lobes, the two lower of which always bear the sporangia upon their lacerated margins;

and in none of the many specimens which I collected do I find any deviation from this structure. The sporangia also differ a little from those of *Anemia*, in having their upper half covered with the annulus, which in *Anemia* seldom covers more than a third or a fourth. In venation it agrees with those species of *Anemia* which have it flabellate, for I find, in that genus, at least three distinct kinds of venation, which affords a strong argument against the use of peculiarity in this structure alone as a generic distinction, without a well marked difference in the fructification or habit.

The same peculiarities which distinguish *Trochopteris* from *Anemia*, distinguish it from *Schizæa*, *Lygodium*, and *Mohria*. Its station is evidently between *Anemia* and *Mohria*.

Tab. IV. fig. 1. 1. Plants; *nat. size*. f. 2. fertile frond, *magn*^{d}. f. 3. fertile portion of ditto more highly *magn*^{d}. f. 4. sporangium, and f. 5. sporules, *magn*^{d}.

Kew, Dec. 1841.

Notices of some Plants, new to the Flora of Britain.

By HEWETT COTTRELL WATSON, Esq., F.L.S.

1. *Linaria Bauhini.*

as a pale variety of *L. vulgaris*, or hybrid between that species and *L. repens*.

In the beginning of August, 1840, I again found an unknown *Linaria*, at Shirley, a few miles from Southampton, where it also was growing with *L. repens* and *L. vulgaris*. This circumstance brought to recollection the Penryn *Linaria*; but whilst I had conjectured that one to be nearer *L. vulgaris*, the Shirley specimens seemed to shade off by gradual transitions into *L. repens*. As far as I can now remember, the plant was plentiful in the Penryn locality, strong and healthy in growth: but at Shirley I saw only one patch of it, growing on a very dry bank, and apparently almost parched up; the lower leaves had withered away, many of the flower-buds had shrivelled without expanding, and the fruit was imperfect. A few of the best bits were gathered, kept two days in water to bring out the buds which still lived, and afterwards dried in the usual way; but thus unavoidably making very poor specimens in the herbarium, and possibly inducing some of the differences presently to be mentioned between these and the Cornish specimens.

Other calls on my attention having prevented the examination of plants collected in 1840, until the latter part of 1841, I made no progress towards ascertaining the name of this *Linaria*; and, indeed, it was forgotten until commencing to label the plants collected about Shirley the preceding year. The specimens were then marked dubiously, as a hybrid variety of *L. repens*. By a somewhat curious coincidence, the very day that I carried to London a small packet of plants for a botanical friend, including fragments both of the Penryn and the Shirley *Linaria*, I was shown a much more perfect specimen of the same plant, which had been then very lately left at the rooms of the Linnæan Society, by the Rev. Mr. Hincks, who (if I recollect rightly,) had gathered it by the river Bandon, in the county of Cork, and had communicated it to the Linnæan Society, as a supposed hybrid between the two species, associated with which I had twice found the same plant. Mr. George Don at once suggested that it came very near *Linaria genistifolia.* Profiting by this hint, I proceeded to examine books and herbaria; and though my impression now is, that the plant is distinct from the *Antirrhinum genistifolium* of Linnæus, there seems no doubt that it is a species (or variety of another species,) which has by some authors been united with *A. genistifolium* Linn.

I have thus explained the slow progress made towards ascertaining the plant, before the perfect and well dried specimen from Mr. Hincks was seen, by way of memorandum to young botanists, that they ought to collect full length specimens whenever practicable, preserve their colours in drying, and not pass over doubtful plants until well ascertained. The last suggestion will perhaps be more strongly enforced by an intimation that an imperfect specimen of this *Linaria* exists in the herbarium of Sir J. E. Smith, with a note that it was gathered by Mr. Lambert, near Southampton, in 1798. Smith had probably been puzzled by the specimen, to which he had attached in pencil the query, " L. vulgaris ? J. E. S." Yet, if I am correct in the name here given to it, his herbarium has authentic specimens from Switzerland which might have enabled him to determine the species.

After being thus found in three such distant counties as Cork, Cornwall and Hants, and keeping its ground in the same or neighbouring localities, (Shirley 1840, and Southampton cause there are two indifferent Swiss specimens in Smith's herbarium, sent by Mr. Duval as undoubtedly Haller's, No. 337, (which is referred to by Gaudin,) and which correspond as closely with the English specimens, as the latter do with each other. One of the Swiss specimens is wild, the other a garden one of the same plant. The Cornish specimens closely resemble the latter, while the Shirley specimens agree nearly with the wild Swiss ones. Gaudin adds also the synonym of "*Ant. genistifolium*, (non L.) Sut. Fl. Helv. 2, p. 34."

From the *Antirrhinum genistifolium* of the Linnæan herbarium, which is well figured in the Botanical Magazine, No. 2183, both Swiss and English specimens widely differ. Independently of other points, the leaves of *A. genistifolium* (L.) are comparatively very broad at the base, and taper upwards into an acuminated point, while in my English specimens the form of the leaf is linear-lanceolate, with a narrow insertion on the stem, and without the long acuminated point. But the English botanist will rather require characters of distinction between this novel *Linaria* and his old acquaintances *L. repens* and *L. vulgaris*; and though characters cannot be given so satisfactorily as might be wished, from my few and imperfect specimens, the following description may suffice:—

Stem diffuse branched, leaves scattered linear-lanceolate (ovate-lanceolate near the base of the stem?), flowers racemose, divisions of the calyx oblong-lanceolate nearly equalling the capsule, spur straight or slightly curved more than one-third the length of the corolla. In hedges. Perennial. Flowering in August and September.

The leaves have a purplish-glaucous tint like those of *L. repens*, are small and narrow in the Shirley specimens, larger and more lanceolate in those from Penryn, but with respect to the "ovate-lanceolate" lower leaves, I write only from recollection of the Irish specimen, on which they are broader and more obtuse than any that I have seen on specimens of *L. repens* or *L. vulgaris*. Flowers pale yellow, striated with purple, and with an orange palate. From *L. repens* the present one differs in the yellow colour and larger size of its corolla, and by the longer spur. From *L. vulgaris* it may be distinguished by its smaller, paler, and striated flowers, and by the longer and narrower divisions of the calyx. The usually verticillate lower leaves of *L. repens*, and the frequently pubescent-glandular calyx of *L. vulgaris*, may assist in the distinction, but are neither of them invariable. From both species, the broader and more obtuse lower leaves will give a distinctive character, if found constant; but the state of my specimens, as before explained, leaves this doubtful.

L. Bauhini would seem to be a variable plant, the specimens from the different localities having each a peculiar character. Those from Cornwall were distinguished by paler (almost white) and more striated flowers, with a straight spur nearly the length of the corolla; and in their dry and colourless state they might readily pass for small-flowered specimens of *L. vulgaris*. In the Shirley specimens, on the contrary, the flowers were more yellow in colour, with a shorter and somewhat curved spur from one-third to two-thirds the length of the corolla; the plants in other respects approximating to *L. repens* more than to the common species. The Swiss specimens have the spur longer and incurved, and marked varieties, and hence a confusion of synonyms; but I have not yet seen evidence, either in specimens, figures, or descriptions, that would induce me to unite all these varieties into a single species, as is done by some authors.

2. *Lolium multiflorum.* (Lam.)

This very remarkable variety of *Lolium perenne*, or distinct species, as may eventually be agreed, I discovered in some abundance in a pea-field, in Claygate, part of the parish of Thames Ditton, in the month of August, 1840. Specimens were transmitted to the Botanical Society of Edinburgh, the following winter, as those of a dubious species of *Lolium;* but I am not aware what was made of them by that learned incorporation of botanists. In 1841, on arranging my collectings during the preceding year, this grass was hesitatingly reduced to a variety of *Lolium perenne*, its tall growth and long awns being considered as possibly a consequence of the stiff and manured soil on which it was found. I was the more inclined to this view, after finding specimens of undoubted *L. perenne*, by the Thames side at East Moulsey, with awns quite as long as those on some of the specimens of the Claygate plant. But on showing the Claygate specimens to Sir William Hooker, he directly produced others which had been gathered in Yorkshire, during 1841, by Mr. Ward, of Richmond; at the same time informing me that the plant was *Lolium multiflorum* of Lamarck, and regarded as a distinct species by many continental botanists. The root is said to be annual, and if this is the case, a good ground of distinction is established, but I do not find any other characters which will invariably suffice to distinguish *L. multiflorum* from the awned form of *L. perenne*; especially as *L. Boucheanum* (Künth) appears to connect them, if we may judge by the published characters. A root transplanted into my garden died away, and the plough destroyed those in the field before I could ascertain whether these undisturbed roots would also die as the winter came on. Judging by the living specimens found at Claygate, *L. multiflorum* may be know from *L. perenne*, by growing in close tufts of many straigl stems from the same root, half a yard and more in heigh The colour of the whole plant, and especially of the flower is paler; the spikelets bear more numerous flowers, and the glumes have mostly long awns. But I have seen *Lolium p renne*, in its awnless state, bearing as many flowers in th spikelet, as do several of the Claygate specimens; and th awned form of *L. perenne* above mentioned, as found Moulsey, has the awns rather longer than some of the sp cimens from Claygate. It is possible that the Moulsey sp cimens would be called *L. Boucheanum*, by Künth; but the were growing among plants of the ordinary *L. perenne*, an differed only in having awns on most of the glumes. O the whole, I am disposed to think that *L. multiflorum* ma stand as a species, on account of its alleged annual root, i upright and tufted growth, and usually long awns. In th Flora Italica, of Bertolini, it is given as a variety of *L. perenn* and *L. Boucheanum* quoted as a synonym; yet Künth an Koch both describe the last as a perennial grass, and *L. mu tiflorum* as annual.

same species of *Bromus*, sometimes as *B. arvensis*, sometimes as *B. racemosus*; and in the past summer, in order to clear up the confusion, I collected a number of specimens of this smooth-flowered *Bromus*, in different parts of Britain. An examination of these, and of the specimens in the Linnæan and Smithian herbaria, leads to the following conclusions. First, that *Bromus arvensis* (Linn.) is probably not a native of Britain, or, if native, is at least very rare. Secondly, that *Bromus commutatus* (Schrader) is frequent by road-sides and in corn-fields, being distributed from the south coast of England, (the Isle of Wight,) northward at least to Forfarshire; in a luxuriant state of growth, being called *B. arvensis*, by British botanists; and in its more ordinary road-side degree of development, being denominated *B. racemosus*. Thirdly, that a non-pubescent variety of *B. mollis* is also named *B. racemosus*; this variety being not uncommon in meadows and damp waste ground.

This view is greatly confirmed by continental specimens, for which I am indebted to Mr. Hornüng, an accurate German botanist—the same who is mentioned by Koch, in describing *B. commutatus*, in the Synopsis Floræ Germanicæ. The specimens labelled, " *B. commutatus*, Schrader—*B. agrarius*, Mihi," by Mr. Hornüng, correspond with the English plant which has been so frequently mistaken for *B. arvensis*, (Linn.); and his specimens of *B. racemosus* certainly come very near the plant which I have long supposed only a variety of *B. mollis*; but whether this is the true *B. racemosus* of Linnæus, as held by Hornüng and other continental botanists, seems to me yet dubious. The errors of British botanists, in regard to *B. commutatus*, have probably arisen from attaching too much importance to the length, and the simple or branched state, of the lower peduncles; characters that vary almost indefinitely in several of the brome-grasses. That the late Sir J. E. Smith had not sufficiently understood our native species, is fully proved by his herbarium, as well as by his remarks in describing *B. racemosus* of the English Flora. Thus, to a foreign specimen of *B. arvensis*, in his herbarium, there is a pencil memorandum, "Earsham, Mr Woodward," probably implying a supposition that Mr. Woodward had found the same species near Earsham. On another sheet, there is a specimen of *B. commutatus*, labelled as *B. arvensis*, with the same habitat and authority; thus making it appear that *B. commutatus* was at first supposed to be *B. arvensis*, by Smith. In the English Flora, however, Mr. Woodward's locality of Earsham is given under *B. racemosus*; and as Smith does not mention any non-pubescent variety of *B. mollis*, in that work, but writes, " Glumes downy in every part, except occasionally at the base," it may be presumed that his *B. racemosus* includes the plant so named by Hornüng, Koch, and others, as the true *B. racemosus* of Linnæus, and likewise the *B. commutatus* of Schrader. To myself, it appears that the latter plant comes nearer *B. secalinus*, while the former is scarcely distinguishable from *B. mollis* except by its want of pubescence; indeed, I have received *B. commutatus* from a good and observing English botanist, under the name of *B. secalinus*, and also *B. secalinus* under the name of *B. racemosus*. With the British Flora and the Agrostographia of Künth before me, I will now endeavour to give the characters of some of the English species, real and alleged; but in doing this, I shall be compelled to modify in fruit, lower peduncles often elongated and branched, simple peduncles equalling or exceeding in length the oblong-lanceolate glabrous spikelets, flowers loosely imbricate, when in fruit the glumes only slightly overlapping at their edges near the base, leaves and their sheaths hairy. *B. pratensis.* Eng. Bot. 920. (a small specimen.)

B. secalinus, Linn. Panicle loose drooping in fruit, lower peduncles slightly branched, simple peduncles about equalling the oblong compressed glabrous spikelets, flowers at first imbricated, afterwards distinct cylindrical, the incurved edges of the glumes not overlapping those of the flower above them, leaves hairy, their sheaths nearly smooth. Eng. Bot. 1171. (good, but the panicle too long.)

B. arvensis, Linn. Panicle spreading loose slightly drooping in fruit, lower peduncles much elongated branched, simple peduncles longer than the linear-lanceolate compressed spikelets, flowers imbricated in fruit, glumes shorter than the awns with two prominent ribs on each side. Eng. Bot. 1984. (glumes too narrow).

Characters drawn from the length and branching of the peduncles must be understood to apply only to well grown plants. All these species are liable to vary with completely simple (unbranched) peduncles, and not uncommonly the spikelets are reduced to three or even fewer. Though difficult to put into the form of botanical characters, there is a first-sight difference, when the plants are advanced towards the seeding stage, that makes them readily distinguishable, except perhaps *B. racemosus*. *B. mollis* is familiar to every botanist. *B. racemosus* is best distinguished from it by the absence of pubescence on its bright green glumes, and from the other species, by its more erect panicle and more closely imbricated flowers. *B. commutatus* is known by its glossy grey-green spikelets, acquiring a brownish-purple tint in sunny spots, its longer and more harsh peduncles than those of the two preceding, and its larger and more inflated glumes than those of the two following species. *B. secalinus* is known in fruit by its heavy panicle and separately rolled up flowers.

B. arvensis has the largest peduncles, and the smallest glumes (*paleæ*) the latter resembling those of *B. commutatus*, in acquiring a purple tinge, but differing in the prominent ribs or nerves on each side.

Specimens of the plants here noticed may be seen in the Herbarium of the Botanical Society of London.

BOTANICAL INFORMATION.

Extracts from a letter from MR. JAMES DRUMMOND.

(The following letter is alluded to, as not having duly arrived, in a note, vol. IV. p. 84, of the former Series of this work, or *Journal of Botany*, for July, 1841.

King George's Sound, Oct. 15th, 1840.

I left a letter with a friend at the Swan River, to be conveyed to you if opportunity should offer, in which I mentioned that I was setting out on a botanical excursion, in

There are, at least, three new species among the *Banksias*; two of them have smaller leaves than any described by Mr. Brown, and the other is allied to *B. prostrata* and *repens*, though with larger foliage than any known species. By Mr. Taylor, who takes this letter, I shall send you a flower and leaf of the creeping species, and a seed-vessel of the two smaller-leaved sorts; one of these, which is strikingly beautiful, and grows to a height of four feet, has foliage about the size of *Erica Tetralix*, (it makes the fifth species of *Banksia* which I have seen, bearing exactly globular fruit); the other small-leaved *Banksia* has glaucous, setaceous, recurved leaves, and cones from two to three inches long.

I also met with a fine *Dryandra*, in foliage so exactly similar to our large *Banksia* (the *grandis* of Frazer), that I at first passed it over, supposing it to be only seedlings of that plant. Closer examination, however, enabled me to detect the flowers, which are borne quite close to the ground. Nowhere, except to the north of William's River, could I find this *Dryandra*, and there I left my specimens of it.

Here I met with Mr. Preiss, and we have been botanizing together, and have found a very remarkable plant, belonging to *Asphodeleæ*, so nearly allied to *Xanthorrhæa*, that I at first took it for one of that genus. The seed-vessels and seeds, however, which are situated in the axillæ of the lower leaves, showed us our mistake. This plant is common in the neighbourhood of King George's Sound, about the settlement, and from the inconspicuous nature of the inflorescence, has doubtless, been overlooked as something, not in flower. The style, which remains on some of the green seed-vessels, (which I send you just as I found them), is full two inches long, and *triangular* at the base. We know nothing of the flowers, as the season for them was entirely past.

I send you two drawings of the remarkable figures which exist in a cave* in the York district; the drawings were kindly done for me by Mr. Neill, of the Commissariat Departmen who executed them from a sketch which I had made on th spot, aided with the following notes.

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* The cave to which Mr. Drummond next refers, is mentioned by Governor Grey, in his highly interesting book on Western Australia. The paintings in it are certainly very inferior to those which Capt. Grey had

A curious cave, called by the natives, the *Moon's House*, i situated in a solid granite rock, near the left bank of th Avon River, and about two and a half miles above the resi dence of Mr. Hardy. This cave is remarkable for having imprinted in the living rock, a circular figure, about eightee inches in diameter, together with several mysterious prints o the human hand. The circular figure resembles what migh be drawn with the tip of the fore-finger, dipped in som white colouring matter, and the circle is subdivided int small squares, by means of five perpendicular white lines placed at rather unequal distances, and crossed again b eight lines. An indistinct outer circle appears, in som places, about two inches distant from the inner one. O laying the eye to the level surface of the granite, the whit lines appear rather *below* the level of the other parts. Th whole interior of the circle, and the interstices between th white lines, are deeply stained with what appears to me to b iron ochre, but others have pronounced it blood.

The prints of the human hand are of two kinds. About far as the elbow. This is below the circle, and instead of appearing of the same bloody colour as the one above, seems to be of a light grey granite, surrounded by the same rock of a red hue. Three fingers of another hand are discernible in a small hollow of the rock, but these are not easily discoverable, being not very different in tint from the surrounding rock; and several indistinct impressions of what may be called "the bloody hand," exist to the right and left of the circular figure. No difference is perceptible in the structure of the rocks where these marks appear, nor could I detect that the surface was either elevated or depressed. The stone itself is hard as flint; and when trying to chip it with the best tempered chisel I could procure, the fire flew at every stroke, and scarcely any impression was made. The more the figures are scrubbed with sand and water, the plainer do they appear. The tradition of the natives is, that the moon made these marks, when he existed here, in the shape of a black fellow, and I regret that I cannot give any more satisfactory account of them.

On my return to the Swan River, I hope to send you, in the form of a journal, some observations on the Botany of the country through which I have passed. Together with the seed-vessels of the *Banksias*, mentioned above, I enclose some specimens of what I suppose to be a *Splachnum*, which grows on the dung of the native dog; but it is probably a common European species.

Hawthornden Farm, Feb. 15th, 1841.

The specimens which I collected on my journey to King George's Sound, last October, are not yet arrived; but on my homeward way, I gathered a few plants, which I brought with me on horseback, and now forward to you. The box contains about two hundred species; the upper and lowermost tiers are from this neighbourhood, the others were found between York and King George's Sound. To a few of them you will find reference made in my journal, which was sent you by the "Shepherd;" she sailed for London about a month ago. The journal does not give so full an account as you would wish of the Botany of the country through which we passed, having been only drawn up for government, in return for their supplying me with rations at the different military posts on my way, between this place and the Sound. You will find, among the specimens, the *Dryandra*, with foliage like *Banksia grandis* and the other, whose leaves resemble the *bipinnata*; also the species described in my letter of Oct. 15th, as reminding me of *Erica Tetralix*, and which has cylindrical cones about an inch in length, and the same in diameter. At the bottom of the box are dried samples and perfect seeds of the noble *Dryandra*, which has flowers similar to the *Cape Honey-bush*, as I mentioned to you in a former communication, dated last September.* This species wants the woody dissepiment to the seed-vessel, which is common to *Banksia* and *Dryandra*, but neither agrees with *Aphragma* nor *Diplophragma*, its seed appearing to be crowned with four uniform delicate membranaceous wings, which are of the length and breadth of the follicle. There is a division of *Dryandra*, coinciding with this in the structure of the seed, and which does not appear to be noticed by Mr. Brown, and subterranean species. Every one of these shoots annually terminates in a flower, which again throws out similar shoots, until the plant becomes a complete mass of leaves, flowers and seed-vessels. I send you likewise a branch, with its leaves and withered seed-vessels, of a *Xylomela*, of which some account was formerly given; also the highly curious capsules of a plant, resembling a *Mesembryanthemum*,* which expands when wet, and closes when dry; a dewy night affording sufficient moisture to cause the seed-vessels to exhibit this remarkable phenomenon, which reverses the usual order of nature. These capsules retain the same property for a considerable length of time, opening when wetted, and shutting up when the atmosphere is dry, even after they have been closely rolled in paper. A portion of the stem of this plant, which I now forward, will give you some idea of the vast number of flowers, produced by a patch, many yards in diameter.

There is, also, a fine specimen of a *Hakea*, with willow-like leaves, from the Meerdup Hills; it attains a height of thirty feet, and has drooping branches, like the *weeping Willow*. I have now upwards of fifty species of this genus, besides some remarkable varieties of the heterophyllous species.

I have just returned from an exploring expedition, fifty miles to the north, in which I was accompanied by my youngest son, and Capt. Scully, the Government Resident in this district. We discovered the best land for sheep yet found in the Swan River Colony, and have named the country, Victoria Plains. There were, however, very few new plants; among them a *Calothamuus*, with downy seed-vessels, of which I transmit specimens; a *Dryandra*, which has very prickly foliage, and a *Grevillea*, with downy buds; but I think to have seen the same as the latter, near the Salt River.

I trust you may be able to read this letter, which I have taken the liberty of writing with a pencil, as my stock of writing paper is exhausted.

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* See as before, p. 81.

In Mr. Drummond's zeal to transmit the earliest account of his botanical discoveries, he had scorned the trifling disadvantage of possessing no paper which would bear ink, and had written the above letter, in pencil, on coarse whity-brown, tea-paper, which had travelled safely, the characters unobliterated, over a space of nearly half the circumference of our globe. Most persons would have considered the want of writing paper as a sufficient excuse for not sending a letter, even to a very short distance.

Swan River, May 13, 1841.

In February last I wrote to you (on very inferior paper, which I hope you excuse), and sent a small box, containing about two hundred species of plants, picked up on my return journey from King George's Sound. The plants which I gathered at the latter place, have not, I am sorry to say, yet arrived; and one parcel, which I had left on the road, has reached me in a vexatiously mutilated condition, owing to the jolting of the cart, and the very dried state of the specimens. I was short of packing paper, and thus the plants have been broken almost to pieces. Since arriving here, I for they were faded when I found them. This *Verticordia* has some resemblance to *V. insignis*, but attains to three or four times its height.

Every exertion shall be made on my part to render the collection of plants from the Swan River colony as perfect as possible; and next season I hope to go to the South, and gather what can be found there.

The genera *Verticordia* and *Chrysorrhœa*, have a peculiarity in their mode of growth, which I never observed in other plants. The *C. nitens*, one of the most beautiful of our botanical productions, during the first stage of its growth (and it is several years before it attains sufficient strength to throw up a flowering stalk), bears linear leaves, quite unlike the foliage which its flowering branches produce. When the plant has gained the requisite strength for perfecting its inflorescence, it sends up a soft, succulent stem, two or three feet high, which, in the second year, displays a cluster of blossoms, two or three inches in diameter. In this stage, the stem in question is so tender a plant, that the weight of the flowers causes the slender stalk to droop, and nearly to touch the ground. The third year, these corymbs of flowers increase in size, but the stem which bears them acquires a corresponding degree of strength, and thus, in full-grown specimens, the corymbs of beautiful flowers are often a foot or eighteen inches in diameter, and excelling the surrounding plants both in height and loveliness, are conspicuous at a considerable distance. The flower-stalk is so pliant, and the blossoms so feathery, that the slightest breeze sets them in motion. When full grown, the plant attains a height of eight or ten feet.

(Mr. Drummond proceeds to give some particulars respecting the action of the poisonous plant, which had been mentioned by him in former communications. Our readers will, perhaps, be surprised to learn that the heaviest drawback to the prosperity of the Swan River colony, consists, not so much in storms, droughts, failure of crops, and the various causes which attend the emigrant's earlier operations, teach him, by painful experience, the disadvantages of adopted land, but by the destruction among the flocks herds that a deleterious plant is apt to occasion. At time, before instituting the rigid experiments which fol Mr. Drummond attributed the mischief to a species of *belia*, a genus of acknowledged acrid properties; and it be feared, that more than one vegetable shares in produ the injurious effects. The finest and strongest animals the first to perish; breathing seems difficult, they sta fall, and die; while the evil effects which attend the eati their flesh, augments the calamity to the owners. The cimens to which Mr. Drummond refers, and which he sent home, constitute a remarkable exception from the qualities of the natural order *Leguminosæ*.)—Ed.

I now wish to send you some particulars respectin poisonous plant which I have mentioned to you in va former communications. Much contradictory discussion taken place on this subject: Mr. Preiss, the German bota whom you know, being unwilling to believe that a poi ous vegetable of any kind exists in the Swan River col lonial Surgeon of the colony. Mr. Preiss was requested to attend, but he declined doing so; I was summoned as a botanist, and obeyed the call. There were nine of us assembled in all.

It must be observed that there are two distinct varieties, if not species, of the leguminous plant* in question; that which is found on Blackadder Creek being quite different from what grows to the east of the Darling Range. The former was first used by us in the experiments. At about half past one, p.m., about half a pound of the plant from Blackadder Creek, consisting of the young branches, was pounded in a mortar, to which a small quantity of water was added. The bruised leaves and stems were then thrown away, and the water administered to a fine, healthy wether sheep, which was marked, and turned out to feed with the rest. We next gave half as much of the juice, and a small quantity of the plant in its natural state, to a wether goat, which ate the plant readily; and lastly, administered about a handfull of the pounded leaves and young branches to a fine wether, putting them in his mouth. The animal swallowed them, and chewed the cud. We had not intended to give any of the juice in the latter instance, but to try the effect of the plant itself, but through inadvertence, a very small portion was also administered. I did not myself expect the poison would take effect before next day, but two of our party, who went to observe the symptoms in three hours, found the goat already dead. The sheep all returned to the pen about five o'clock, except the marked one, which lay down, unable to walk, and died at six o'clock; and the third animal also perished in three hours, not having apparently stirred from the spot where it stood when the poison was administered, but dropped down dead without a struggle.

In all these cases, the poison operated much more speedily than it does when the animals eat the plant of their own accord. In the previous cases, too, at William's River, death did not ensue so quickly; and the goat here did not call out, as the creatures usually do when thus poisoned. The Blackadder Creek plant, with which we made the experiments at Guildford, has leaves of a deeper green colour, and smaller size, and is, altogether, a less plant, though the two are precisely alike in stipules, flowers and seed-vessels.

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* They would seem to belong to the genus *Gompholobium*.

The report of the committee, after instituting these experiments declares that *all doubt is removed as to the cause of the death of so many of our cattle, sheep and goats.* The Colonial Surgeon, Mr. Harris, examined the bodies of the poisoned animals, and drew up a statement of the morbid appearances which they presented; his report was printed in the *Western Australian Journal*, for May 22nd, which I send you.

From what I have heard of the disease called *Guttau*, or *Guttar*, at Sydney, I have no doubt it is caused by some plant of this family; and though many different opinions have been given, the difficulty which attends the analyzing of vegetable poisons, makes it a hard matter to prove the point with such incontrovertible certainty, as to remove all doubt from the minds of persons who are unwilling to credit the existence of poisonous plants in this colony.

Three valuable dogs were lost by eating the entrails of the sheep on which we had experimented. I have been informed, and had the misfortune to lose, in consequence, seven valuable animals in one night.

JAMES DRUMMOND.

May 15th, 1841.

The following animated letter, from a gentleman long resident in Surinam, and ardently devoted to the natural history of that rich and fertile territory, cannot fail to be read with interest. The plants to which he refers, have been consigned and safely received by the writer of this note. They include five hundred distinct species, (with numerous duplicates) in a very excellent state of preservation; many of these plants are of rarity to our herbaria, and not a few quite unknown to the botanical world. The charge of freight from Surinam to Holland, thence to Glasgow, and thence to London and Kew, has considerably advanced the cost fixed upon them by the liberal offer of Dr. Hostmann; but arrangements will be made with him for future supplies, from other parts of the colony, on very reasonable terms; so that, through the exertions of this able and enlightened traveller, we may hope to obtain a tolerably complete Flora of the Dutch settlements in Guiana. The specimens in the different sets are all accurately numbered, and a list of names and characters of the new species, will shortly be given in the pages of our Journal.—ED.

Paramaribo, Dec. 1840.

SIR WILLIAM,

Confident that the offer which I had made, respecting the collecting of Surinam plants, would be found worthy your attention and reasonable as to terms, I did not wait your reply to my letter of November last year, but proceeded to make a kind of preliminary excursion into the interior of this Colony. There was much for me to learn, regarding the preparations which a longer journey would demand, for I had never prosecuted my researches beyond the cultivated land of this [illegible] find it impract [illegible] originally proposed.

[illegible] inducements for thus emb [illegible] receiving [illegible] independent, and th [illegible] entirely had I [illegible] spending the remainder [illegible] and specialty of b [illegible] of medicine [illegible] wholly in the [illegible]

[illegible] cultivated p [illegible] the best means [illegible] therefore, d [illegible] limits, and at t [illegible] the banks [illegible] river. I found [illegible] which the parts neare [illegible] cultivated a hundred year [illegible] differing but littl [illegible] a quarter of an hour d [illegible] the character of a g bited, and are, moreover, destitute of roads. But, should these obstacles be permitted to prevent the gathering and drying of plants in Surinam, the European botanist must be content to want the productions of this country. For it is a well known fact, that not only the greater number of plants, but all our most interesting kinds, blossom at the rainy season, and then alone. While in the dry period, vegetation wholly disappears in some places, and everywhere is very languishing and poor, until revived by rain.

Throughout Surinam, the climate is universally damp, and moisture abounds, all the year round. Even in the inhabited districts, a kind of *Byssus* is often seen growing on articles made of leather, or woollen clothes which have not been used for some time. And when this is the case during the dry season, and in cultivated districts, how much worse may be expected, in the vicinity of large rivers, and morasses, under the dark shade of forests, through whose dense foliage no sunbeam ever penetrates, and particularly when incessant torrents of rain are pouring heavily down? Thus you may perceive, that while this colony largely shares the disadvantages of excessive tropical moisture, it does not present such a disparity of climate as constitutes what is called the dry season in other countries, and the botanist loses less comfort by travelling during wet weather, than would be the case in Brazil and British Guiana.

You kindly recommend heavy pressure in drying plants. But it must be observed that the process which would preserve specimens elsewhere, is inapplicable here: for the *Trees*, *Shrubs*, *Aroideæ*, *Orchideæ*, and such like, are sure, when subjected to pressure, to turn black, decay, and throw off their leaves.

Artificial heat, and *nothing else*, can remedy the excess of damp, which otherwise forbids the preserving of plants, altogether, in this colony. This point I regard as perfectly settled. Difficult too, as it is, to dry specimens at first, in a tropical forest it is equally hard, but no less essential to prevent their imbibing moisture afterwards. I think I have discovered a plan which obviates both these inconvenience and it is you, who see my specimens,* that must pronounc on its success or failure. That the individual, who venture into a pathless wilderness, must lay his account with facin many dangers, and enduring numberless privations, is a matter of course, and I believe that in these disadvantageou respects, Surinam is exceeded by no country in the world which botanists have ever visited. In Brazil, on the contrary the traveller meets with roads, which however rugged, ar still practicable for mules; so that from the south of tha vast country to its northern extremity, it cannot be said tha his progress is anywhere materially obstructed; especiall since the way in which the population is scattered enable the naturalist to obtain the most necessary articles of subsistence. Here, the person who would proceed by land, ha to force his passage with the aid of an axe or cutlass throug the forest, or he is guided by the course of a river, which invariably, can only be navigated by small canoes, and is attended with considerable danger. He must carry whateve food is needful, and when his provisions spoil in this dam country, he must depend for a supply on his gun; and ofte be reduced to support life with such abject fare as an alligat or monkey can afford, or find himself reduced to utter sta passed. That *Orchideæ* should abound more here than anywhere else, is to be expected, and accordingly one sees them at every step. In the lower lands, they chiefly cling to the trees, many of which seem entirely covered by them. In more elevated situations, they also grow on the ground, while a few inhabit the water, and these last seemed of very uncommon occurrence. Others, and most grand ones they are, will thrive in savannahs, sterile to such a degree, that it is hard to conceive what they feed upon. While this splendid family stands unrivalled for beauty of colour, deliciousness of scent, and singularity of form, it is, however, far exceeded in number by the *Leguminosæ.* Some of these adorn with their humble and minute, but lovely blossoms, those great plains of our colony which would otherwise fatigue the beholder's eye by their uniform monotony; the larger species, which are more numerous, vie with our trees; while others, again, exceed every production of this country, for height and grandeur, and overtop all the rival denizens of the forest.

Palms are very numerous; among them some climb and then disappear between the brushwood, and several of this distinguished family, called by the great Linnæus, *Princes of the Vegetable Kingdom,* lurk under the shade of shrubs, perhaps not six feet high. Others, again, lift their magnificent crowns aloft; but a striking peculiarity of this tribe consists in many of the species being apparently limited to a very small tract of land and seen nowhere else.

There is an extreme variety of *Ferns,* both herbaceous and arborescent. Among the smaller species, I noticed some, whose size, when full grown, did not exceed half an inch.* *Aquatic Plants* appear to be rare.

But I will no longer occupy your, doubtless, valuable time by my poor attempts at describing what I have seen. You must be pleased to accept my heartfelt confession, that never did I feel so sorry at not being a botanist, as when I beheld so many interesting objects which I am at a loss to convey any idea of in words, and which might fill a book. Nothing that I saw charmed me more than a *Lecythis*, whose crims flowers were peculiarly fascinating: but it is idle to enum rate where all alike was beautiful and new.

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* The one to which Dr. Hostmann here alludes, is the rare *Gymnogramme pumila.* Spreng. Sup.

On my return from this expedition, I received your lett I had now gained some knowledge of the process of collecti in this country, and my conclusion was, that nobody can po sibly furnish the plants of Surinam at the price for which had offered them; unless, indeed, your remarks proceed fro a mistake of the terms, or except the individual be possess of such independent means, as to relinquish any idea compensation. And that this is not the case with me, I nee not be ashamed to say, for having given up my profession pursuits for the sake of botany, I am compelled to look for subsistence to the collecting of plants.

I approve, however, very much of the caution you hav used to guard against error on my side, and disappointme on that of those for whom I may collect: and in reference this subject, I would only add the following remarks, whi I offer with submission to your better judgment.

There is no danger that I should "only collect the plan of the cultivated portions of this colony," these being com paratively very few in number. Not that I can bind mys of this neighbourhood. I am quite convinced that a diligent collector would meet with new species, for many successive years, though he should limit his researches to the environs of Paramaribo. All the plants collected by my friend, M. Weigel, a number of which, I believe, were published by Reichenbach, (the far greater portion being sold to N. America, after he had fallen a victim to his profession,) had been gathered near this place and town. It must also be observed that M. Weigel limited his attention to a few large natural families, *Filices*, *Gramineæ*, *Solaneæ*, and the smaller herbaceous plants, to the exclusion of those, which even I, though no botanist, can readily perceive to form the characteristic growth, the very type of the Surinam Flora.

When M. Splitgerber,* a botanist of note from Holland, spent a short time in this colony, I presented him with a considerable number of plants, which I had gathered and dried, according to my own process, ten years previously. He said, to use his own words, "I should be sorry to be doomed to prepare specimens in this way;" and certainly all those which he had himself collected, fell to pieces and turned perfectly black.

There may be, and certainly there are, disadvantages in the fact of my not being a good botanist; and these extend to others, as well as, more deeply to myself. But some counterbalancing recommendations still exist. I shall not travel through the country, as many naturalists have elsewhere done, even on horseback, pursuing only the known track and gathering what is most striking. Nor will the partiality influence me, which sways the experienced botanist, and which too often induces him to overlook certain tribes altogether, and to limit his attention to particular groups of plants for which he feels a preference; thus causing the absence of those links in the chain of natural alliances, which occasions such gaps in science. How can the traveller, who comes a stranger to the land which he is to explore, and is limited with respect to time, acquire a knowledge of all its vegetable productions? As for me, I have made up my mind to spend the rest of my days in Guiana, and devote them to the collecting of its plants. Thus I am no *traveller* in the sense of the word above meant. And as I cannot discern between the rare and common, every vegetable interests me alike. Not even the charms of a *Victoria regalis* could so engross my attention as to make me overlook the humblest of her *Criptogamic* brethren!

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* This gentleman has recently paid a visit to this country, and is known to the scientific world by his description of the ferns of Surinam.

Besides, I am in a manner, pledged to succeed or to sacrifice myself in the attempt. I have given up the occupation by which I made my livelihood, and exposed myself to the ridicule of the whole colony. I am willing to run every risk and to face much hardship and danger, and should my life be lost in the ardent pursuits of science, may I not shelter my reputation behind the well known quotation—

> "In magnis voluisse sat est?"

Here I might add a list of the plants I have to send you, and close this, I fear too long letter; but since you have expressed an interest in me, I deem it right to communicate every step I have taken towards pursuing my enterprize, and therefore request your attention to the following lines.

I have stated that the greatest impediments towards exploring the most remote parts of Surinam, arise from the want of means of travelling and transport. The southern surrounding tribes, whose settlements extend over more than 100 German miles in one direction, and 70 German miles in another. A very mountainous district, far beyond the source of the Fapanoni, and watered by many streams, is inhabited by the *Acoori*, or as they term themselves, *Frio Indians.* These again, are at constant war with the natives of the Corantin, and banks of the Amazon river Indians. The political position of these Bush Negroes, and several other hordes, who occupy the upper part of the Surinam river, induced our colonial government to maintain a resident among them. This post is doubtless, in one respect, of prodigious importance. Still the remoteness of the situation, the difficulty of communication with civilized countries, and most of all, unavoidable necessity of dwelling among a horde of ferocious and untimely-freed negroes, and associating with them, or condemning oneself to utter isolation, these considerations have caused the office to be held by individuals of the very lowest class, ranking but little above the unhappy beings among whom they ought to have represented a respectable government. For these reasons, all those individuals who have during the last eighty years become the resident among the Bush Negroes, have either fallen premature victims to the horror of their banishment, (sometimes by their own hands,) or have returned with broken spirits and ruined constitutions. Indeed it must demand no common pitch either of fortitude or of degradation to endure such a lot. To associate on equal terms of intimacy with these savages, were indeed to be level with the brutes. But to live secluded from all civilized society—to make one's abode among sombre and interminable forests, the secure haunts of wild beasts, and still more ferocious men, and to find in the society of trees and flowers and harmless animals a compensation for all privations—this were, I think, the portion of no common mind. Resignation, endurance, courage, independence, and an extraordinary predilection for natural history, must go far to form such a character.

And now, Sir William, I leave it to you to judge whether

I may claim to be classed among individuals possessing the latter attributes; but certain it is, that to the astonishment of the whole population of Surinam, I have accepted the office of government resident among the Bush Negroes of Anka, as the district is termed. The salary which attaches to the post is very small, owing to the reasons which have caused it to fall into the hands of the lowest individuals. Our present governor, Rear-Admiral Ryck, the most enlightened individual who has ever presided over this colony, aware as he said of the advantages which might accrue from confiding a situation of such eminent importance to me, and regretting that it had been hitherto held by people chosen from the very populace, gave it me instantly.

Holding, as I now do, this public office, I forbear making any remarks on the narrow salary which is injudiciously attached to it. I will only say, that while the remuneration may have sufficed for individuals of such a description as those who have hitherto occupied it, I found it so inadequate to the position which I hold in society, that I was obliged to part with the collection of birds, insects, and plants which I had by me, in order to cover the costs of an expedition which I hope will prove eventually advantageous to the

Biographical Sketch of the late ALLAN CUNNINGHAM, ESQ. F.L.S. M.R.G.S. &c. &c. *by* ROBERT HEWARD, ESQ. F.L.S.

(In the First Series of this Journal, vol. iv. pp. 231-320, we traced the life of this zealous naturalist to the period of his expedition north of Liverpool Plains, in 1827; we now proceed to narrate the continuance of his journeying.)

In the month of June, 1828, Mr. Cunningham embarked for another visit to Moreton Bay. The voyage was a very boisterous one, and a horse that he was taking with him, was thrown down by a lurch of the vessel, and so severely injured, that it died the next day. On their passage, they touched at Port Macquarie, and landed at Brisbane Town on the 1st of July. Mr. Fraser, the colonial botanist, accompanied Mr. Cunningham on this trip. An expedition was, shortly after their arrival, undertaken to Mount Lindsay, whose elevation is 5,700 feet, and the grandeur of the scenery in its immediate vicinity, appears to have afforded much gratification to all the party. On their return route, Mr. Cunningham and his people struck off for the Limestone Station, on Bremer River, while Captain Logan and Mr. Fraser returned direct to Brisbane Town. After giving his cattle a short rest, Mr. Cunningham started again, with the intention of making the Gap, in the dividing range, that he had found last year, where his journey then terminated, and thus to connect his discoveries. After some difficult travelling, he was fortunate, on the 25th of August, in finding a route, that with trifling labour, may render the passage through the mountains perfectly accessible for all the purposes of the agriculturist, who, in future days, will doubtless become the denizen of the vast pastoral country to the westward. Thus, a second time, discovering in this singularly inaccessible country, an outlet to rich and fertile lands, which for ages will employ the energies and talents of the industrious farmers of New South Wales.

In a walk towards a ridge on which grew *Araucaria Cun-*

ninghamia in great abundance and magnificence, Mr. Cunningham was reminded of his first visit to these districts, in company of the late Surveyor-General Oxley, and he pays a well-merited tribute to the worth and talents of that gentleman. "In traversing a patch of forest-ground, formerly walked over by Mr. Oxley, accompanied by Lieut. Butler and myself, to the Pine Ranges, I could fain have recalled to life that lamented gentleman, who so long and so highly creditably to himself, filled the important situation of Surveyor-General in this colony, and many a pleasing incident connected with this excellent man, now recurred to my recollection. I passed over the ground and ascended the darkly brushed acclivity of the Pine Range by the same opening in the thicket we had, four years since, penetrated to the higher points, where grew those stately timbers, the monarchs of these forests—the new *Araucaria*."

A further exploratory journey was taken to the westward and north-west, in which the position of Hay's Peak, a conical, densely-wooded mountain, situated in 27° 36′ S. and 152° 8′ E. was determined, and the Brisbane River explored, as far as the vicinity of Lister's Peak, in 26° 52′, the most northern point of Mr. Cunningham's discoveries, of through which to admit of a road being made to the interior beyond them. My pass, therefore, through these lofty mountains, the mean elevation of which, above the shores of Moreton Bay, cannot be less than 4,000 feet, seems thus the only opening to the interior country from the coast between the parallels of 26° and 29° South.*

Mr. Cunningham now bade farewell to his friends on the Brisbane, and embarked himself and collections, on board the Isabella, government schooner, on the 29th of October, and on the evening of the 4th of November, anchored in Sydney Cove. The botanical collections of this expedition were of a very interesting and valuable character, living plants having been procured of *Araucaria Cunninghamii*, *Flindersia australis*, *Oxleya xanthoxyla*, *Gyrostemon attenuatum*, *Castanospermum australe*, *Cupania xylocarpa*, *Bignonia jasminoides*, *Cargillia arborea*, *Capparis cydoniodora* and that magnificent specimen of *Proteaceæ*, *Grevillia robusta*, also several species of *Orchideæ*, and that giant fern *Arcrostichum grande* A. Cunn. (*A. fuciforme*, Wall.); these, with an equally valuable collection of seeds and specimens, were the fruits of this interesting journey.

In the month of January, 1829, a journey was undertaken over the Blue Mountains, towards Bathurst, in search of seeds, generally found ripe at this season of the year; however, on the present occasion, Mr. Cunningham was sorely disappointed, from the excessively dry season that had just gone by, the effects of which he thus graphically describes: "On passing Springwood, a military post, situate twelve miles on the eastern ascent of the mountains, we were much struck with the blighted aspect of vegetation, in consequence of the long-continued drought of the year, and the excessive solar heats that have been very generally experienced throughout the colony, more particularly during the last two months. This sad, sombre scene we carried on with us the greater part of our way over these ranges to Mount York, where th public road abruptly dips into the Vale of Clwyd. Many o the *Acaciæ* and other *Leguminosæ*, which had afforded m their well-ripened seeds formerly at this season of the year, I observed had met with so severe a check, that although they had produced in a partial manner, their flowers were unable to perfect their fruit; whilst others, again, which in moderate seasons of moisture had put forth their blossoms in October, so as to furnish ripe seeds about the opening of the new year, were now observed to be struggling for an existence, not having blossomed at all. Such was the parched condition of vegetation generally, that it only required a spark and a breeze to set the whole of this mountainous country on fire; this had been partially effected either by careless travellers having allowed the fires of their several bivouacs to spread, or by the aborigines in hunting; for miles the flames had destroyed every trace of vegetable life, and had left a blackened waste of the most desolate description. At length we reached Cox's river, but meeting with no plants in the state in which I had hoped to have found them at this season, I did not continue onward to Bathurst, but by lengthened stages returned to Paramatta with only a few packets o the head waters of the Bremer and the country in its vicinity, enriching his stores both botanically as well as geographically. He returned to Brisbane Town the latter end of July, where and in its environs as far as Campbell's Range he continued his exertions till the middle of September, when he embarked himself and people with upwards of seventy boxes or pots of living plants on board a colonial vessel for Sydney, at which port he arrived the latter end of the month.

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* Vide, the Journal of the Royal Geographical Society of London, vol. ii, p. 99.

About this period Mr. Cunningham anticipated the gratification of once more joining his old commander, Captain King, who it was expected would, after finishing his survey of the west coast of South America, come to Sydney to refit his vessel, "The Adventure," and return to England *via* the north-west coast of Australia, and by that means endeavour to complete the survey of that portion of the north-west coast that was left incomplete at the termination of his fourth voyage in 1822. Mr. Cunningham would, if this plan had been carried out, have joined "the Adventure," and returned to England with Captain King. But despatches from the Admiralty ordered that officer to return to England direct.

In the early part of May, Mr. Cunningham embarked on board the Lucy Ann, for Norfolk Island, and landed at that penal settlement on the 11th. Of this remarkable island our traveller thus speaks—"In consequence of the heavy surf at the usual landing place in Sydney Bay, the master worked the vessel round to Cascade Bay, on the north side of the island, where finding little or no swell, the wind blowing off shore, the boat was lowered down, and the despatches were landed in charge of a soldier. By this opportunity, I also stept on shore and walked over to the settlement on the southern side of the island. In the patches of land that bound the line of road which stretches from N. to S. across the island, I recognized among many plants quite new to me, several species indigenous also to New Zealand, and everywhere the lemon and guava trees (introduced by the first settlers in 1788), exhibited their rich fruit which formed a pleasing diversity when contrasted with the extremely beautiful dark hue of the prevailing laurel-like foliage of the plants around them.

"On reaching the settlement, I waited upon Colonel Morisset, the commandant, who received me with the utmost politeness, and who upon perusing a letter from the Colonial Government respecting myself, (of which I was the bearer,) assured me of his readiness to afford every facility to enable me to effect the objects of my visit. With this view a government servant who had traversed the island in every direction, and therefore well acquainted with its intricacies was ordered to attend me in my daily excursions. Of the vegetable kingdom in this island, none are more remarkable than its noble pine (*Araucaria excelsa*), and tree fern (*Alsophila excelsa*,) and as these are lofty plants and generally grouped together in small bodies on every part of the island they form a most decided feature of the landscape. In habit and general appearance, the plants assume more the aspect of the vegetation of New Zealand than that of Australia or any other country, as much so as the Cowdie Pine (*Dammara australis*), a tree also of gigantic stature, in the shaded forests that clothe the undulated surface of New Zealand, marks a landscape in aspect exceedingly similar to that of Norfolk Island.* At the discovery of the island in 1774, Forster, the naturalist, who accompanied Captain Cook on his second voyage round the globe, had an opportunity of landing on its north shore, near Cascade Bay, when among been made on the botany of this beautiful isolated spot, until that able naturalist and draughtsman, Ferdinand Bauer, visited it, about the year 1804; and who, doubtless, during his stay, collected every plant of its small but interesting flora; which, exclusive of a few mosses and lichens, comprehend something more than one hundred distinct species, belonging to full half that number of natural orders. Of these, ten furnish timbers that might be usefully employed in carpentry, boat building, and even in cabinet work, viz:—*Araucaria excelsa*, *Elæodendron australe ?* (*E. curtipendulum*, Endl.), *Blackburnia pinnata*, *Hibiscus Patersonii* (*Lagunaria Patersonii*, G. Don), *Olea apetala*, *Croton sanguifluum*, A. Cunn. MSS. (*Baloghia lucida*, Endl.), *Kleinhofia ? elliptica*, A. Cunn. MSS. (*Ungeria floribunda*, Schott and Endl.), *Pennantia corymbosa*, *Mimusops laurina*, A. Cunn. MSS. (*Achras costata* Endl.), *Coprosma villosa*, A. Cunn. MSS. (*C. pilosa*, Endl.)"

Mr. Cunningham having expressed a desire to Colonel Morriset to visit Phillip Island, that officer very kindly made such preparations as were necessary, for sending our botanist to this small islet, the result of which had nearly proved of a most disastrous and fatal nature, but which will be much more interestingly described in Mr. Cunningham's own words:

"Immediately after the government vessel that had conveyed me to Norfolk Island, had been dispatched on her return voyage to Port Jackson, the weather set in and continued so tempestuous, and the surf on the bar was so considerable, that several weeks elapsed before a safe and favourable opportunity was afforded me to land on Phillip Island, to examine its vegetation, which it was the opinion of my friends at the settlement, I should find to differ somewhat from the plants of Norfolk Island. This opportunity occurred on the 17th of June. It was a fine serene morning, with a light air from the north-west; and as the surf on the reef was exceedingly moderate, the commandant (on all occasions desirous of meeting my utmost wishes), ordered the large [illegible] to be got ready. To [illegible] my [illegible]; never a hending, although many were the reports that had co his knowledge, of the schemes which [illegible] of the co had in contemplation to effect their escape from the s ment, and that my departure for Phillip Island was to b signal by which the malcontents of the party were to m to make the attempt, as I afterwards [illegible] out.

With provisions for a week, for myself and three vants, and accompanied by Lieut. Burrough, of the 39th duty at the settlement, I crossed the channel, estimated miles broad, and safely landed on Phillip Island, at the rock, within a small bay, on its northern shore, and h pitched the tent at the back of its sandy beach, prepared self for the day's excursion. This insular spot is ele and of broken surface; its ridges, which, for the most are perfectly bare of trees or herbage, rising on its s eastern side, to a peak of some, at least 1,300 feet abov level of the sea, immediately at its base. On all sides i hibits a cliffy, precipitous character, so that landing can be effected with safety at one or two points. Its geol structure is precisely the same as that of the larger is the naked soil being a red clay, and the rock a trap, assu a basaltic form on its southern side.

but a very scanty supply of water, there being none but what is caught in hollows in the rocks, which the ravines furnish after heavy rains, they nevertheless, found an ample support in its varied herbage, moistened by the dews at night. The produce of this stock has at various periods, been greatly thinned, but as the animals have not been disturbed during the last twelve months, their numbers are again considerably augmented. We had no means of estimating the aggregate number of either on the island, as the swine lie close during the day, beneath the dense underwood, in the ravines; when, also, but few goats make their appearance, the greater body being within excavations in the rocky face of the cliffs, perfectly inaccessible to man.

"Of the plants, I have to remark that they were, with but few exceptions, the same as those of Norfolk Island. Among them were a species of *Hibiscus* (*H. insularis*, Endl.), which has a suffruticose, spinous stem, bore decayed yellowish flowers, appearing not to differ from a plant found at Port Macquarie. I collected flowering specimens of *Blackburnia pinnata*, not previously met with in that state, and also of *Capparis citrina*, A. Cunn. MSS. (*Busbeckia nobilis*, Endl.), and the ripe fruit of *Mimusops laurina*, A. Cunn. MSS. (*Achras costata*, Endl.), which being produced in abundance, afford considerable provender for the pigs. In the shades, I detected a dark, glossy, pinnated-leaved twiner; it appeared to be an undescribed species of *Clitoria* (*Clianthus Baueri*, A. Cunn. MSS.).

"About four o'clock, we returned to the tent, when the officer who had accompanied me to the island, joined the boat, which I had detained on his account, and returned to the settlement; and as I proposed to occupy myself another day on this isolated spot, I requested that upon his leaving my encampment, he would send the boat over for me on the 19th.

"18th.—During the preceding night, the wind was extremely violent at periods, and some rain fell between the squalls; and as the morning sky was much overcast, and the wind, after sunrise, began to freshen from the north-western quarter, there were but too evident appearances of the day proving more or less showery. At an early hour, whilst it continued fair, I again climbed the ridge, accompanied by one of my people; and after pushing our way through some brushes of Caper, entered a thick, close, wood, in which *Croton sanguifluum* (*Baloghia lucida*, Endl.), *Hibiscus Patersonii* (*Lagunaria Patersonii*, G. Don), *Myoporum obscurum*, Forst., *Blackburnia pinnata*, Forst., the large *Piper* (*P. psittacorum*, Endl. and *Olea apetala*, Vahl., were very frequent. This latter I found in flower and young fruit, and was, therefore, fully enabled to establish its identity with Forster's plant, originally found by that botanist in New Zealand. The *Coccoloba australis* (*Polygonum australe*, A. Rich.) which I formerly detected on the sandy shores of the Bay of Islands, I also met with, in open situations, but not in fructification. On the southern and western sides of the island, where more particularly I directed my walk, I observed on grassy spots *Commelina cyanea*, R. Br., *Solanum nigrum?*, *Plumbago zeylanica*, with the purple flowering *Dolichos* (*Canavalia Baueriana*, Endl.) bearing its pods, which are tricarinated on their upper edge. A few blighted trees of *Araucaria* stood detached from each other in open exposed situ-this morning it blew a hard gale from the north-west, which drove up a heavy surf over the rocky beach, immediately beneath the spot on which we were at rest. About five o'clock, or thereabouts, whilst it was still dark, I was suddenly awoke in my bed, by three men rushing into my tent, and in an alarming boisterous tone, desiring me to rouse up, as they had taken the settlement, and had put the commandant in gaol, and hurried me to dress myself, as I was, they said to go with them. In an instant, before I was well awake, or had time to consider the character of the individuals who were about me, a fire-stick was brought into the tent by one of the party, and on lighting a candle, which they had found, they seized my fire arms, and hastily turning over my baggage, carried off my bedding, wearing apparel, a hamper of cooking utensils, the whole of my provisions, &c. One of the party, on placing my hat upon his head, turned out my watch, which I had placed within it for security, the preceding evening. The watch was, as a matter of course, taken as a valuable prize, although I begged hard for it to be returned to me, on the ground of its having been lent me by a friend; the reply made was that 'they would borrow it of me,' as it would be of use to them in the long journey (voyage) they had before them.

"This scene of plunder had gone on some minutes before my people, who were roused by the noise, made any attempt to approach me. In this they were prevented by others of the party, who had landed from a boat now perceived in the offing, and who seized their blankets, and such of their provisions as they found within their hut. Hearing a parley between these strangers and my people, I was in the act of stepping out of my tent to see what was going on without, when one of these unwelcome visitors, who was doing the duty of sentry in front of the tent, with my fowling piece on his shoulder, thrust the muzzle of it towards me, desiring with a horrid oath, that I should keep within, or else he would shoot me. At this time, we enumerated eight persons about us, all men of determined character, who having laid claim to every article of property we possessed, immediately proceeded to strike my tent, the material of which, they said, they required for the voyage they had in contemplation, and it was instantly taken down and with the other articles, and a cask containing about twelve gallons of fresh water carried off to the boat, which was kept in charge of three men. They repeatedly demanded with much vehemence my compass; and finding I had neither that or any other instrument useful in navigation, they manifested great disappointment. As soon as those who had landed had again reached the boat, by swimming through a heavy surf she was put off, and was almost immediately, in consequence of the continued darkness of the morning, out of sight.

"When they had left us, which was according to our estimation, about half-past five o'clock, we began to look back on the scene of plunder, we had so lately witnessed. It was fortunate for us that the rain, which had fallen in heavy showers in the earlier hours of the morning, had ceased, as we now found ourselves but half-dressed, in our shirts and trowsers, having myself neither hat or shoes, and without the shelter of a tent. Two of the men who were with me, having been prisoners on Norfolk Island for some years, im-had under cover of the extreme darkness of the morning, found means to escape with one of the boats, leaving the settlement, however, in the undisturbed possession of the commandant. This view of their proceedings was confirmed on the arrival of the large launch from the settlement, about seven o'clock, which had been despatched with a party of soldiers, under the orders of Lieutenant Borough, in pursuit of them. To that very active officer I communicated every particular of what had taken place, when conceiving it probable that previous to their putting to sea, these convicts would fill up their fresh water at Cascade Bay, he immediately pushed off, and with the utmost despatch made for that side of Norfolk Island. Not meeting with them there, he returned towards Phillip Island, and after cruising about to the southward and eastward during the whole of the day without seeing the least trace of them, he returned to me at dusk. After encountering much bad weather, and landing his party, we passed the night on the island together, and next morning (20th) about sunrise, we crossed over, and safely landed at the settlement, where I learnt it was the full intention of the runaways to have obliged me to have joined them to assist in navigating their boat to the land, to which they were destined. This design, however, they abandoned on finding I had neither a compass or any other instrument useful in navigation; a circumstance that repeatedly called forth from them during the short period they were on shore with me, the strongest expressions of disappointment. Driven to desperation, and apprehensive that they would be immediately pursued by an armed boat from the settlement, it appeared evident that on leaving me they made an offing, and then stood away at once before the wind in a south-easterly direction, with the hope of making the North Cape of New Zealand, distant 460 geographic miles. The fact, however, of eight of their number being landsmen, altogether unaccustomed to the oar, and the inability of the three who could steer to pursue a steady course to the point to which they were destined, (admitting they knew its bearing and distance which it is more than probable they did not,) left no doubt on the mind of every person on Norfolk Island of their having perished in the very heavy weather that prevailed throughout the first day and night of their voyage."

Mr. Cunningham often spoke of the extraordinary escape he had experienced on this occasion—for taking into consideration the reckless, determined, and brutal character of the party who landed on Phillip Island, it was a most providential circumstance that on being disappointed in not finding nautical instruments in his possession, that they had not wreaked their vengeance on him, and added murder to a long list of crimes. The amount of property plundered from him, was worth about £25; and on his return to Sydney, he presented a memorial to the Colonial Government, praying for remuneration for what had been stolen from him, but he was coolly (officially) informed that not being in the employment of the Colonial government his Excellency would not be justified in granting indemnification.

Our botanist now became desirous of returning to Sydney, but the vessel which had been long expected, had not yet made her appearance, and it was not until the 5th of August, that she was perceived making for the island; the state of the weather during her stay was exceedingly tempestu-

eeded by others, evidently the effect of a southerly gale;
soon the bar was pronounced perfectly impassible. Now
he whole of Mr. Cunningham's collections, baggage, bed-
g, &c., were on board the vessel, it may readily be sup-
ed he was not a little disappointed upon thus being
vented from joining the "Lucy Ann." His friends consoled
by observing that as the surf on the bar had not got up
onsequence of any wind blowing on shore, but the result
a distant southern gale, the bar would in all probability be
sable in the morning. However, in the night, the wind
ring to the north-eastward, freshened to a hard gale, and
en the morning came, the vessel was not to be seen; she
d been blown off to the southward, and being exceedingly
ht, nine days elapsed before she again made her appearance,
en, although the weather was stormy and there was much
in the offing, it was deemed advisable to lose no time in
ning the vessel, as a return of a northerly gale was to be
prehended. Accordingly, on the afternoon of the 11th,
. Cunningham embarked in a well-manned whale boat,
d after hard pulling for about four miles through a heavy
, reached the vessel in safety; and she immediately pro-
eded on her voyage. The vessel having strong gales and
easterly current to contend against, made a long and te-
us voyage, and did not reach Port Jackson until the af-
noon of the 28th, when Mr. Cunningham once more
pped on shore in Sydney, after an absence of 21 weeks.*

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[*] The following plants were detected on Norfolk Island by Mr. Cun-
gham, that are not enumerated in Endlicher's *Prodromus Floræ*
folkicæ.

amalina scopulorum, Ach. Syn. p. 297. *Lichen scopulorum*, Eng. Bot.
88. On the trunks of *Araucaria excelsa.*

silotum triquetrum, Sw. Fil. p. 187. Schk. crypt. t. 165. *b.* On de-
d trees in shaded woods.

olypodium phymatodes, *Drynaria vulgare*, J. Sm. Jour. Bot. v. 4. p. 61.
n. Mant. p. 306. Schk. crypt. t. 9. On decayed timber in damp woods.

rymoglossum carnosum, J. Sm. Jour. Bot. v. 4. p. 66. *Niphobolus*
nus, Blume. Fl. Jav. t. 19.? On rocks.

ephrodium remotum, Hew. (*nov. sp.*) frondibus pubescentibus lanceoland for his future guidance. On the 16th of November, however, these instructions reached him, and they were to the effect that he was peremptorily directed to return to England by the 1st of April, 1831, a date impossible for him to comply with, as it would have entirely precluded his making up such a collection to bring with him as his lengthened sojourn in the colony demanded. He immediately acknowledged the receipt of his recall, and stated the impracticability of fulfilling it to the letter, owing to the length of time the Treasury minute had been reaching him, (viz.: from 30th of March to 16th of November), a term of nearly eight months.

In the latter end of December, he paid a farewell visit to his favourite botanizing ground, Illawarra, from whence he returned richly laden with its valuable stores, as well of living plants as of seeds and bulbs. A journey was also made to the vicinity of Broken Bay, the habitat of the very beautiful *Grevillea Caleyi*, R. Br. (*G. blechnifolia*, A. Cunn. MSS.), which is there found in considerable abundance. The seeds appeared to be a favourite food for the black cockatoo. On the 6th of January, 1831, a journey was undertaken across the Blue Mountains to Cox's River, which employed a week, at the end of which, he returned with a collection of escription of it cannot be better given than in his own ords, which I shall extract from the close of the journal of is proceedings in that country.

"My collections and baggage being so far in a forward state for immediate removal by water to Sydney, I fixed on the afternoon of the 12th of February to leave Paramatta, and as the commander of the Forth, Captain Robertson, had advised me that he would be ready for sea on the 15th, I lost no time in taking a final leave of such of the extensive circle of friends I had formed in the course of my long residence in the colony as were within the range of a day's journey, from whom, as well as from others residing in remoter districts, whose numerous civilities to me on various occasions have laid me under a great weight of obligation, I was happy to receive commissions to attend to in London for them. These farewell visits occupied me a week. I returned to Paramatta on the evening of the 8th, and, next day, the few articles I possessed of household furniture were disposed of by public auction, and my two horses (saddle and draft) were purchased by friends. Upon the 11th, two large government boats having been dispatched from Sydney by the Master Attendant of the dockyard for the conveyance of my collections and baggage to the Forth, the whole were sent off in charge of my servant,[*] and, on the following day, I gave up the possession of my cottage and premises which I had held during the last eight years, and having no further employment for a native lad who had been in my service from the period of my return from Norfolk Island, I discharged him, whilst my government servant, (a prisoner for life), was, by permission of the superintendent of convicts, transferred, for the time being, to the employ of a friend, until government should grant him a ticket of leave, for which indulgence I had very strongly recommended him, in consideration of the intelligence and general activity which he had uniformly manifested in a service of more than four years and a half with me, in which period he had accompanied me on journeys in the interior, as also to Norfolk Island, and in my more fortunate and much more interesting voyages in 1828 and 1829 to Moreton Bay.*

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[*] Among them were eight large plant cabins, containing choice collections of living plants from Moreton Bay, Norfolk Island, Illawarra and the Blue Mountains; two cases of terrestrial *Orchideæ*, containing the roots of thirty-two species of that beautiful family, six cases of seeds, specimens of wood, &c. &c.

"It now remained for me to bid adieu to several old friends in Paramatta, whose kind offices I can no more forget than attempt to eradicate from my memory in after-life, the recollection of the very many agreeable periods I have spent in that quiet town, the centrical situation of which, at a convenient distance from the bustling sea-port, with which it commands both land and water communication, proved on all occasions so extremely favourable to my pursuits. I now left Paramatta, and, accompanied by a friend, reached Sydney in the afternoon, where I learnt that the departure of the ship was postponed until the 16th. This gave me more time to settle certain matters of business in Sydney, as also to call on several friends living at this port, and among them was Mr. Macleay, our worthy colonial secretary, whom I accompanied to his retreat on the shores of Elizabeth Bay, where I was not a little delighted to find so much had been done in planting and improving the sterile ground amidst high sandstone rocks since I visited the Bay last year. Among the very interesting assemblage of rare native plants, (indigenous to Moreton Bay, Port Macquarie, Norfolk Island, &c.), which have, through the medium of the colonial government vessels, been brought together in this garden, where they were growing with the utmost luxuriance, I observed a liliaceous plant, originally discovered by Mr. Brown on our inter-tropical shores during the Investigator's voyage. This novelty, the *Calostemma album* of that very able botanist, which I sought for in vain during my several voyages

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* This was far from a solitary instance of Mr. Cunningham's rewarding a deserving convict servant; his journals shew numerous recommendations of the people he had under his charge, on all occasions, when they had served him diligently and faithfully on his distant journeyings.

h Captain King, was sent from Melville Island on the
rth coast, where, I was informed, it was found in low si-
tions in the vicinity of the settlement established there in
24. As there were several plants of it in the garden, where
eriodically puts forth its small white flowers. Mr. Macleay
sented me with four bulbs for Kew, so that the royal
rdens will soon boast of possessing a fourth species of this
nus, so nearly related to *Pancratium*. The one I discovered
me years ago on the Brisbane River at Moreton Bay, which
o throws up, for the most part, a single elliptically oblong
f and white flowers from its root, differing from it in the
ape of the sterile teeth of the corona.*

" Our vessel, which was now ready for sea, had hauled out
to the stream, preparatory to her quitting the port alto-
ther, which the Captain hoped to do at daylight on the
th. I therefore waited upon the Governor and Mr.
acleay for the last time, and taking leave of all my friends,
ined the other passengers on board in the evening. The
ip was now dropped down to the Heads, but as the wind
ew fresh from the south-east, it was deemed advisable
ain to bring to off Watson's Bay. During the period
e lay at anchor, just within the port, we were repeatedly on
ore, and in one of my walks over the small but beautiful
tate near South Head, called Vaucluse, I was exceedingly
atified to find a plant of *Orchideæ*, many years ago disco-
ered and described by Mr. Brown, which, however, I
ever but once during fourteen years' residence had the good
rtune to meet with: it was that excellent botanist's *Neottia*
stralis, which like others of the genus, had the flowers of
he spike spirally disposed. Among the grasses of a lawn,

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* The Moreton Bay plant here alluded to, on flowering and perfecting
a seed vessel, was ascertained to be a species of *Eurycles*, and is figured
nder the name of *E. Cunninghamii*, in the Bot. Reg. t. 1506, and Bot.
ag. t. 3399, where also is described another Australian species disco-
ered by Mr. Cunningham, in 1820. *Calostemma luteum*, Bot. Mag. t.
01, Bot. Reg. t. 421, was discovered by Mr. Cunningham in 1817, while
th Oxley's expedition on the Lachlan River, as was also Mr. Brown's
purpureum. Bot. Mag. t. 2100, Bot. Reg. t. 422.

I found a small group of the plants richly in flower, and had not previously had the opportunity to send to this rare species, I was the more happy and carefu possess myself of the whole of them to add to that sele I have made at this season of this most interesting fa On the 25th, the wind having become sufficiently favour to enable us to make an offing, we bid adieu to the co and stood out to sea."

(*To be Continued.*)

On the permanent regions of Alpine Vegetation. By Rich Brinsley Hinds, Esq.

Some comparative inquiries into the conditions of Al vegetation in different mountain-chains, have led me to clude that there are certain features common to all, which also hold some highly natural and interesting rela with the distribution of vegetation in the direction o latitude. In every mountain range will be observed a tain general character in the vegetation, as the plains ar and the highlands gained. The cultivation of the land a sea-level ascends a certain distance; forests succeed; sh next appear and cease; these are followed by a propor ate increase of grasses; and lastly, vegetable life is close a few members of the agamic families.

Hence, five distinct features are imposed by the natu the vegetation, and they will be found more or less devel in all Alpine regions of sufficient elevation. Each may according to the influence of physical agents, but trac them will be always evident.

Something similar will be observed if vegetation is t from the equator to high latitudes. At first, forests gr prevail, and though there is in those countries with a temperate climate, a partial cessation, yet they reappe the gloomy but magnificent pine and fir districts of the temperate regions. When the trees disappear, rather merous assemblage of shrubs becomes conspicuous; gr then assume an important station, and are succeeded by Agamæ (or Cryptogamic) plants.

The constancy with which these characters are met with in Alpine vegetation, where elevation and latitude admit a full development, induces me to consider them permanent; while the circumstance of their being repeated in the direction of the latitude, is favourable to their claim to be regarded as a natural state of the vegetation. A somewhat closer view of the individual regions, and of the sources of their permanent existence, will establish these circumstances more satisfactorily, and show on what basis they rest. These regions will stand as follows, and may be thus designated:

1. Region of Lowland Cultivation.
2. Region of Trees or Woods.
3. Region of Shrubs.
4. Region of Grasses.
5. Region of Cryptogamic Plants.

1. *Region of Lowland Cultivation.*—This is not strictly an Alpine region, but may be conveniently regarded as such. Its extent of elevation is at the spot where the prevailing cultivated plants of the latitude cease to be productive. It has been well defined by Phillipi, on Mount Etna, where it ceases at 3,300 feet. It is the zone of Vines of Humboldt on Teneriffe, extending to nearly 3,000 feet. The two zones of the *Cactus* and *Euphorbia*, and of European cultivation of Von Buch on Teneriffe, Canary, Palma, and Ferro are embraced in it. Spix and Martius make two regions of it in Madeira; the region of tropical plants stretching to 700 feet, and the region of the vine, fruit and corn, to 2,300 feet. Kuhl has also two regions, that of *Cacti* to 630 feet, and that of the vine to 2,030 feet. This region is of narrow extent in Norway, Sweden, and Finmark; but in the Carpathians it rises to 1,500 feet. Within the tropics, it is a broad and important region, and its limits are much influenced by local circumstances: this is particularly the case in the Himma-

leh Mountains; and in the Andes, about Quito, it only ceases at 5,000 or 6,000 feet.

2. *Region of Woods.*—A magnificent region in all Alpine situations, and conspicuous on the Andes for the multitude of its forms. In the Himma-leh it is also very rich. It is the region of woods of Humboldt on Teneriffe; of Phillipi on Etna, to 6,200 feet; in the Canaries to 4,080 feet; and the region of the Chestnut, in Madeira, to 2,950 feet. Wahlenberg makes two regions of it in Lapland, both only attaining 800 feet; and Von Buch, in Finmark, in 70° N.L., limits it at 730 feet.

3. *Region of Shrubs.*—The existence of this region as a characteristic portion of Alpine vegetation, has been as fully observed as the last, though its greater distance from the plains and its less obtrusive constituents, do not give it the same interest. It is the region of the *Retama* (*Spartium nubigenum*) on Teneriffe; and on the Pyrenées and Mont Blanc is extensively covered, to about 9,000 feet, with *Rhododendrons.* In the Andes, about Quito, it reaches, according to Colonel Hall, to 13,000 feet, and among a variety of other plants, is conspicuous for its shrubby *Compositæ.* Kuhl has two regions in Madeira for this, one of *Spartium* and another of *Heath*, though both are mingled to the summit of the island. It is equally conspicuous in high latitudes. On the southern declivities of the mountains of Lapland, dwar *Betula*, *Vaccinium*, and *Salix* attain 3,300 feet; and in Finmark, Von Buch limits them at 3,100 feet.

4. *Region of Grasses.*—The predominance of these, in certain Alpine situations and parallels of latitude, has not been overlooked, but they do not seem to me to have attracted that attention for their permanence which they deserve. The universal increase they gradually assume over the rest of the flora as the latitude is increased, is an admitted fact in Geographic Botany; but the characteristics they convey depend more on the repetition of individuals than on the amount o species. In high latitudes, much of the surface is often covered with straggling grasses, which, in the short bright

summers of these regions, exhibit a very active growth. Weddell, speaking of the South Shetlands, says that none of the islands afford any vegetation, with the exception of straggling grass; and this equally applies to others in a similar latitude. In Melville Island, in 75° N.L., the proportion of grasses to the phenogamous plants is 1 to 5; in Great Britain it is 1 to 12.5, and the decrease continues as we advance south. But, as I have said, the proportion of species is not a guide to the influence of greatly multiplied individuals. In the Andes, the region is distinctly traced in the Paramos, and occupies a space from 13,000 to 14,500 feet. Here are the large and valuable cattle-farms, where animals are reared for the supply of the plains below. In that portion of the Himma-leh Mountains examined by Captain Johnson, between 30° and 32° N.L., there was a fine green sward, at 14,600 feet. Madeira has not sufficient elevation to possess this region, but Humboldt distinguishes it on Teneriffe. *Poa annua* abounds on the Swiss Alps at 7,400 feet, where its spontaneous growth is so vigorous that it is used for fodder.

5. *Region of Cryptogamic Plants.*—The parallel between this region and the circumstances of vegetation at its limits in high latitudes is intimate. Colonel Hall, on Chimboraço, under the equator, at nearly 18,000 feet, found *Draba aretioides*, a *Culcitium*, and a syngenesious plant; and "still higher, a *moss*, which may be considered as having attained the highest limit on the globe at which vegetable life exists." On Teneriffe, the Himma-leh Mountains, the Alps, and all mountains of sufficient elevation, a few *Lichens* are universally the latest plants; and on some, if there is shelter and moisture, they enjoy a vigorous existence.

In most instances of Alpine vegetation, a further analysis than that into regions becomes necessary; but I do not find that any beyond these can be regarded as constant. The further divisions, or sub-regions, are confined to the particular mountain-range under consideration, but where they are important in the elucidation of peculiarities. There is then this distinction, that the features constituting the region are to be met with in all Alpine floras, but those of the sub-region are limited to a solitary one. Wahlenberg divides Lapland into six Alpine regions, with 3,300 feet of direct elevation. The three first of these belong to the Region of Woods, but they are classed by him as the lower region of forests, upper region of forests, and the region of pines; the whole only extending through 1,200 feet. The distinction may be necessary for this locality, but will not apply to others.

It is, perhaps, a little singular that the division of the regions adopted by Humboldt for Teneriffe, though the earliest devised, should correspond so closely with the views I entertain. His third zone of pines has only to be united to the second of laurels and other trees, and the few cryptogamic plants at the limits of vegetation to be erected into a distinct region, and the division will become natural and complete. Here, also, in his fifth region, he admits the prevalence of grasses and the characters they impose.

The island of Madeira is so much a place of call for vessels bound to all parts of the world, that many botanists have had the opportunity of examining its vegetation. Spix and Martius assign it four Alpine regions: that of *tropical plants*—of the *vine*, *fruit*, *and corn*—of *woods*—and of *broom and heath*. Kuhl has as many as five regions; for he considers the broom and heath to be distinct, though he says that the broom appears even on the highest part of the island. The two first regions of these authorities are, in fact, only one and the propriety of considering them as sub-regions is questionable, for the vine commences at the sea-shore, and *Opuntia vulgaris* ascends nearly as high as the vine. Madeira, in reality, contains only three Alpine regions, and its altitude does not admit of more: nor can I see grounds fo any subsequent division. These are: 1st, the Region o Lowland Cultivation, which extends from the sea-shore to 2,100 feet, and is a well defined region; 2nd, the Region o Woods, which attains to 3,000 feet, and is composed chiefly of chestnuts and laurels; 3rd, the Region of Shrubs, ceasing only on the highest lands, and where *Spartium scoparium*, *Erica scoparia*, and *Cytisus divaricatus* prevail.

Description of Coptophyllum, *a New Genus of Ferns; with observations on* Anemia. *By* George Gardner, Esq.

Coptophyllum.

Char. Gen. *Sporangia* ovata, vasculoso-reticulata, apice breviter radiatim striata, hinc longitudinaliter dehiscentia, biseriata, in laciniis frondis contractæ disposita. *Indusium* nullum. *Sporulæ* subtriangulares, striatæ, glabræ.

Filicula *Brasiliana*. Rhizoma *repens*. Frondes *cæspitosæ*, *dissimiles*; sterilis *multifida*, *pinnulis linearibus dichotomis*; fertilis *tripinnata*, *pinnulis sporangiferis*, *contractis*; venæ *furcatæ*.

Nomen ex *κοπτω seco*, et *φύλλον folium*.

1. C. *millefolium*; villosum, fronde sterili ovato-oblonga multipartita, laciniis brevibus linearibus dichotomis, fertili elongata coarctata.

Anemia Millefolium. *Gardn. in Hook. Ic. Plant. tab.* 478. *Herb. Bras. n.* 4083.

Hab. In montosis aridis apud villa de Arrayas, Provinciæ Goyazanæ Brasiliæ.

2. C. *buniifolium*; glabrum, fronde sterili ovata multipartita, laciniis elongatis dichotomis, fertili laxe paniculata.

Anemia dichotoma. *Gardn. in loc. cit. tab.* 477. *Herb. Bras. n.* 4084.

Hab. In saxosis, in summitatem montis Serra de Natividade, Provinciæ Goyazanæ Brasiliæ.

The two small *Ferns*, upon which I have constructed this genus, accord with *Anemia* in the nature of their fructification, but differ considerably in habit from the true species of that genus; the fertile fronds rising directly from the rhizoma, and being quite unconnected with the barren ones. This peculiarity approximates it to *Mohria*, and the resemblance between them is further indicated by both of them occasionally having part of the fertile frond barren. *Coptophyllum* however, differs essentially from *Mohria* in its double row sporangia, and in the want of the indusium-like, inflex margin of the latter. In *Coptophyllum*, the annulus is muc less developed than in any of the other genera of the trib and in this respect, as well as resembling in habit some spe cies of *Osmunda*, it forms the connecting link between th family and *Schizæaceæ*. The affinities of the six gener which now constitute the tribe *Schizæaceæ*, may be shown a follows :

Anemia.
Schizæa. Coptophyllum.
Lygodium. Trochopteris.
Mohria.

In my paper on *Trochopteris*, when contrasting that genu with *Anemia*, I referred to the two individuals which compos the present one, as being typical forms of *Anemia*. I referre also to *Anemia aurita* (Sw.) ; but without having seen t plant, my only knowledge of it being derived from the d scription of Swartz in his *Flora Ind. Occ.* The very distin habit of my own two plants, led me to make some inquiri respecting this species, and those others which form the fi section of the genus *Anemia* in *Sprengel's Systema Vegeta lium;* all being described as having their fertile fron arising distinctly from the rhizoma, and some of which thought might prove to be congeners of my two ; but neith in the Herbarium of Sir William Hooker, nor in that of M Smith, do I find any of the species there enumerate There are, however, three of them, figured by Plumier, a certainly none are *Anemias*. The first, *A. bipinnata*, S (Plum. t. 155.) is evidently an *Osmunda*, and perhaps n distinct from *O. cinnamomea*. The next, *A. verticilla* Sw. (Plum. t. 160.) is a most anomalous-looking plant, a quite a puzzle to all who have made ferns their study. T me, it appears to be composed of two distinct things. Wh is figured as the barren frond, seems to be a *Pteris*, nearly allied to *P. leptophylla*; while the fertile is perhaps a representation of an old frond of *Acrostichum trifoliatum* (Linn.) The third species, *A. filiculifolia*, Sw. (Plum. t. 161), Mr. Smith believes to be a *Polybotrya*; and the character of the fertile frond is quite distinct from that of any of the known *Anemias*. Of the two remaining species of this division, *A. aurita* (Sw.), and *A. cicutaria* (Pœppig), no figures have been published; but, judging from their descriptions, neither of them will associate with *Coptophyllum*; nor can they be considered as *Anemias*, since they possess a very different habit from that of the normal species of that genus.

I have already explained what I consider to be the true structure of *Anemia*, in my remarks on *Trochopteris*, in a former number of this Journal; viz, that the fructified spikes are not the lower pinnæ of a barren frond in a changed and modified state, but that an union of the stipes of two fertile fronds, similar to those of *Coptophyllum*, with that of a barren one, takes place; and several arguments, besides those already adduced, may be brought forward to support this opinion. It has been said, by some, that an analogy exists between *Anemia* and *Osmunda*, in the manner in which their fructification is produced; but, if we compare them attentively, we shall find but little indeed; for in *Osmunda*, the sporangia are borne either on a distinct frond, as in *O. cinnamomea*, or on the upper or middle divisions of fronds which have their remaining portions barren. In this respect, *Anemia* exhibits much greater affinity with *Botrychium* and *Ophioglossum*; for in all of them we find the fructified portion to be formed on the same principle; the only difference being that, in the two latter, an union of two stipes only takes place, and this accounts for the fertile spike and the barren portion standing *fore and aft* (so to speak) to each other, and not laterally, as in *Anemia*. We find, also, that their fertile and barren fronds resemble each other, quite as much as those of *Anemia*; and that in the same species, even, they have no definite place of separation from one another, the disunion sometimes arising close to the lower divisions of the barren part, and sometimes only a little way above the rhizoma. In *Botrychium Virginicum*, the separation, in the greater number of instances, occurs immediately below the divisions of the barren frond; but, in a specimen in Mr. Smith's Herbarium, I find the union of the fertile with the barren frond continuing half-way up the rachis of the latter; and the case is the same in a specimen of *B. lanuginosum*, in the Herbarium of Sir William Hooker. Such differences as these could not exist, were the fertile spikes a modified state of some part of the other spike; for then, the mode of separation would be definite. In *Ophioglossum* there is a similar state of things. In that genus, the barren and the fertile parts hold the same relative position to one another which they do in *Botrychium*; and if we look, for example, at *O. pendulum*, we find that the sterile fronds have no midrib, while in the fertile there is a dense reticulated central mass, which is not continued beyond the separation of the fertile spike. How is this produced, if not by the union of two fronds? Plumier, in his figure of *O. palmatum*, represents the fertile spikes as coming off from the margins of the lower part of the palmated portion of the frond; but in my Brazilian specimens, I do not find this to be quite the case. In them, it is easy to imagine that there is here also an amalgamation of two fronds; for, in the largest and most perfect specimens, the spikes are partly central, and partly situated a little within the margin, the marginal ones being the highest, having been carried up, apparently, by the superior development of the barren part. I have no doubt that an examination of the anatomical structure of the stipes of these plants in the recent state, would prove the correctness of my views.

Kew, Jan. 1842.

On TRICHOMANES VITTARIA, *De Cand.* By W. J. H.

(*With a fig.* TAB. V.)

AMONG the more interesting plants in Dr. Hostmann's collection from Surinam, to which allusion is made at p. 97 of this volume, I find a most beautiful Fern, quite new to me, but taken up by Poiret in the Encyclopédie Méthodique, Partie Botanique, vol. 8, p. 65, under the name of *Trichomanes Vittaria*, De Cand. Herb.; and, much more recently, the plant has been published by Dr. Splitgerber, in an Essay on the Ferns of Surinam, as a variety of *Trichomanes floribundum*, Humb. et Bonpl. (and Hook. et Grev. Ic. Fil. tab. 9.) The latter is a pinnated fern, with all its pinnæ elevated upon a long stipes; the latter, a simple one with a short stipes; and although I possess copious specimens of *T. floribundum*, from various localities, and not a few of *T. Vittaria*, communicated by Dr. Hostmann, yet the two preserve all their respective characters, and I am still inclined, without further evidence to the contrary, to retain the Surinam plant as a truly well-marked species, and one of the tallest and finest in the whole of the most beautiful genus to which it belongs. It may be thus characterized:

Trichomanes *Vittaria*; stipitibus cæspitosis brevibus pilis rigidis paleaceis scabris, frondibus elongatis simplicibus lineari-lanceolatis venosis, venis parallelis exsertis copiose soriferis, indusiis cylindraceis basi attenuatis breviter bilabiatis, columellis (fragilibus) longe exsertis.

Trichomanes Vittaria. *De Cand. Herb.—Poiret, in Encycl. Méth. Bot. v.* 8, *p.* 65.

Trichomanes floribundum, *β. Vittaria. Splitgerber*, Fil. Surinam, in Tydschr. voor Nat. en Phys. v. 7. p. 440 .

HAB. Cayenne. (*Herb. de Candolle.*) Surinam. *Dr. Splitgergerber, Dr. Hostmann.* (Herb. Sur. n. 206.)

Radix fibrosa, fibris descendentibus, simplicibus, flexuosis, rigidis. Stipites cæspitosi, erecti, 2-4 uncias longi, pennæ passerinæ vix crassitie, fusci, rigidi, parce pilosi, hinc sulcati, pilis sparsis, rigidis, paleaceis, patentibus. Frondes sesqui-

pedales et ultra, unciam et sesquiunciam latæ, nigro-virides, membranaceæ, subpellucidæ, lineari-lanceolatæ, utrinque sensim attenuatæ, margine denticulatæ, dentibus (e venis exsertis) inæqualibus, nudis vel soriferis. Venæ copiosæ, fere horizontales, parallelæ, simplices vel furcatæ, ultra marginem exsertæ, venulis minutissimis transversis unitæ. Costa subtus prominens, fusca, semiteres, supra canaliculata, inferne scabriuscula. Sori copiosi totam fere marginem occupantes, versus basin obsoleti. Indusium lineam longum, cylindraceum, coriaceum, basi attenuatum, superne breviter bilabiatum, labiis rotundatis. Columella longissime exserta, flexuosa, filiformis, basi sporangifera.

From the delicate membranaceous texture of the fronds, they are liable to be torn and injured in the direction of the veins, in the same way that the leaves of the Plantains are said to be, when exposed to the wind in their native countries.

References to the Plate.

Tab. V. Fig. 1. Portion of the fertile frond, magnified. Fig. 2. Smaller portion, more magnified. Fig. 3. Indusium laid open to show the sporangia. Figs. 4. 5. Sporangia. Fig. 6. Sporules, all magnified.

Enumeration of FUNGI, *collected by* DR. HOSTMANN, *in Surinam.* *By the* REV. M. J. BERKELEY, M.A., F.L.S.

(*With figures*, TAB. VI. *fig.* 1—3.)

1. Agaricus (Marasmius) *hæmato-cephalus*, (*Mont in Ann Sc. Nat.*) *Host. No.* 297. On leaves.

2. Agaricus (Marasmius) *atrorubens* (n. sp.); pileo membranaceo convexo regulariter radiato-venoso atro-rubente lamellis confertiusculis cultratis pallidis, stipite gracillimo umbrino velutino. *No.* 297 intermixtus.

Pileus $\frac{3}{8}$ of an inch broad, of a rich chocolate red; smooth, but with a peculiar velvety lustre; convex, dimpled in the centre, from whence it is regularly radiato-venose. Gills pale, cultrate, much attenuated behind. Stem 2 inches long,

very slender, twisted, umber, clothed with short velvety down.

A single specimen only occurred, mixed with *Ag. hæmatocephalus*; from which it is clearly distinct in its velvety stem and darker radiato-venose pileus. The gills are besides more numerous. The colour of the pileus is nearly that of *Potentilla Russelliana*. Both are closely allied to *Ag. juncicola*; at least to what is described under that name in the *English Flora*.

3. Lenzites.

4. Polyporus *sanguineus*, (Fr.) *Host. n.* 29.

5. Polyporus (Pleuropus) *Hostmanni*, (n. sp.); pileo convexiusculo ligneo-suberoso valde tenui zonato badio subvelutino glabrescente; margine acutissimo; stipite obsoleto, hymenio pallidiore, poris subinconspicuis rotundis. *Host. n.* 93.

About 2 inches broad, 1 inch long, Stem obsolete, exactly as in *Pol. modestus*, slightly convex above, bay, with a few dark zones towards the paler very acute margin, even, at first very minutely velvety. Hymenium bordered all round, of the same colour as the margin; pores very minute, scarcely visible to the naked eye, round; edge of the dissepiments even.

Allied to *Pol. caperatus*, but the pileus is scarcely velvety; the substance harder and not of the same rich brown; and the pores are more minute.

HYPOLYSSUS, *Pers.*

Pileo duro gomphiformi; hymenio lævi.

6. Hypolyssus *Montagnei*, (n. sp.), *Host. n.* 202.

On twigs.

About ½ an inch high, dirty white; gregarious, hard, almost bony. Stem variable in length, very slender; ascending, attached frequently by a minute disciform base, quite distinct from the pileus, smooth. Pileus top-shaped, flat or slightly depressed above, below covered with the smooth ochraceous hymenium, which is cracked when dry, and resembles that of a *Corticium.*

I owe the first knowledge of this curious fungus to Dr. Montagne, who kindly sent me specimens which were collected in Guiana. As they were barren, it was almost impossible to form any correct notion as to its affinities, but two or three more or less perfect individuals amongst those distributed by Dr. Hostmann, show that it is *Hymenomycetous.* As Persoon's genus *Hypolyssus* is altogether effete, and its characters are very like those of the plant before us, I have thought it advisable to restore it. The hymenium is perfectly developed in a single specimen only. The genus will come near *Craterellus,* from which however it differs greatly in its solid pileus.

Tab. VI. fig. 1. Hypolyssus Montagnei, *nat. size, b.* two plants, one fertile, and one barren, *magn^d. c.* section *magn^d.*

7. Stereum *lobatum, (Kze. sub. Thel.) Host. No.* 125.

8. Clavaria *furcellata,* (*Fr. in Linn.*) *Host. No.* 301.

9. Calocera *divaricata,* (n. sp.); aurea, stipite tenui ramoso, ramis ramulisque acutis divaricatis. *Host. No.* 253.

1½-3 inches high; stem short, slender, divided above into about three main branches, which are repeatedly but irregularly subdivided; the ramifications, especially the ultimate ones which are very slender and acute, more or less divaricate. The axils of the ultimate ramuli are flattened, so that they have frequently a palmate appearance.

Tab. VI. fig. 2. Calocera divaricata, *nat. size,* from a small specimen.

10. Clavaria *chondroides,* (n. sp.); aurea, erecta, deorsum dichotoma, sursum paniculata, ramulis obtusiusculis. *Host. No.* 212.

On the ground.

Cæspitose, about 1 inch high; stem very slender, dichotomous below, irregularly but not very abundantly branched above; the ultimate ramuli, which are suberect, rather obtuse. Less gelatinous than the last, and of a darker color, with a cartilaginous appearance when dry. The present plant has a more gelatinous appearance than is usual in *Clavaria*, but I have referred it to that genus because of its habitat.

Tab. VI. fig. 3. Clavaria chondroides, *nat size.*

11. Peziza *sulcipes*, (n. sp.); cupulâ tenui poculiformi, extus aleuriatâ, margine fimbriato; stipite gracili lacunoso costis in cupulam extensis.

Cup 1 inch broad, thin, mealy outside; margin fringed with short hairs. Stem ¼ of an inch high, not 1 line thick, sulcato-costate, the ribs extended over the base of the cup, where they are sometimes divided above with reticulated interstices. Asci cylindrical, equal, obtuse above and below, with a slender lateral stem.

This species approaches the nearest perhaps to *Pez. ambulacrorum*, (Chev.) the colour of the dry plant is pale ochre. When recent, it must be a very elegant species. There was no number attached to the specimens.

12. Phallus *indusiatus*, (*Vent. Fr. Syst. Myc.*) *Host. No.* 296.

Sophronia Brasiliensis, (Pers. in Freyc. Voy.), is probably the same species. *Dictyophora campanulata*, Lév. has the same form, but the meshes of the indusium appear to be smaller. I find the sporidia extremely minute and elliptic.

13. Sphæria (Hypoxylon) *scopiformis*, (Kze.) *Host. No.* 300.

14. Sphæria (Hypoxylon) *comosa*, (Montagne.) *Host. No.* 302.

On the petioles, &c. of some large herbaceous plant.

15. Sphæria (Hypoxylon) acicularis (n. sp.); suberosa acicularis simplex, rarissime furcato-palmata, lævis; stipite lævi vel subplicato; clavulâ elongatâ lineari cum stipite confluente, crustâ laccato atro farinâ argillaceâ velatâ reticulato-rimosâ; peritheciis globosis; ostiolis prominulis.

3-3½ inches high. 1 line or more thick, corky, white within, clothed with a hard black crust which is dingy below, but above veiled with an argillaceous wash; head linear rarely flattened and forked at the apex, confluent with the stem, very much shrivelled when dry, minutely cracked into areolæ, dotted with the black minute ostiola. Stem various in length, darker than the head, but opaque; smooth, with a little down at the base. Perithecia, which are perhaps immature as they contained no asci or sporidia, pale, not prominent, with the exception of the ostiolum. In form resembling *Sphœria cornuta.*

16. Rhizomorpha *corynephora* (Kze.) *Host. No.* 179.

Enumeration of FUNGI, *collected by* H. CUMING, ESQ. F.L.S. *in the Philippine Islands, by the* REV. M. J. BERKELEY, M.A. F.L.S.

(*With Figures,* Tab. VI. figs. 4 & 5, and Tab. VII. figs. 6-11.)

Perhaps in no part of botany so little has been done with regard to geographical distribution, as in Fungi. The collections which arrive from time to time from extra-European countries, are seldom more than partial, and still more rarely made by botanists versed in these obscure and often despised vegetables. A few of the more striking and easily preserved species are gathered, and the rest remain unobserved or negplete, which it can scarcely be presumed to be, when Mr. Cuming's various occupations are considered, would form a most interesting subject of comparison with those of Java. Parts of the Philippines are situated in a degree of latitude in the Northern Hemisphere, exactly corresponding with that of Java in the Southern. There is a slight difference in longitude, but not so great as materially to affect the comparison. The former lie between 5° and 20° N. lat., the latter between 5°.52′ and 8°.4′ S.L. The climate appears to be nearly the same, the year being divided into nearly equal portions of wet and dry weather; yet not so constant as to be unvaried by occasional days of fine weather in the rising season, or by showers in the time of drought. The temperature, indeed, appears to be more equable in the Philippines. Meyer fixes the mean temperature of the summer between 80° and 82°, and that of winter between 70° and 72°, and the mean temperature of the whole year would be probably somewhat short of 77°. Neither does the temperature seem to be ever very high; nor does it vary much in the course of the day. In Java, the range of the thermometer appears to be higher, and the daily variation greater; and there is a regular diminution of temperature from the coast to the interior, at the rate of two or three degrees of Fahrenheit for every ten miles. Supposing, then, the present collection to be any thing like an approximation to the Mycology of these extensive islands, we shall not be surprised to find the number much larger in Java, and we may expect to find many of the species different. The number of species described by Junghuhn, is one hundred and thirteen, but some addition ought probably to be made to this. The number in Mr. Cuming's collection is about thirty-five, exclusive of two or three of the larger *Polypori*, which I have not had an opportunity of examining. Amongst these, ¼th only of the species are common to Java and the Philippines, and out of these four are species of *Polyporus*, common to all tropical countries. It may, however, be interesting to see to what families these are referrible, and what are the predominant forms. Of Mr.

Junghuhn's fungi, then, 3=$\frac{1}{37}$th are *Coniomycetes*; 9=$\frac{1}{13}$th are *Hyphomycetes*; 7=$\frac{1}{16}$th *Gasteromycetes*; 18=$\frac{1}{6}$th *Pyrenomycetes*; 10=$\frac{1}{11}$th *Discomycetes*; and 66, or above $\frac{1}{2}$ are *Hymenomycetes*. In Mr. Cuming's collection, there are no species of the 1st, 2nd, and 4th families; of the remaining families, 1=$\frac{1}{35}$th belongs to *Gasteromycetes*; 5=$\frac{1}{7}$th are *Pyrenomycetes*; and 29, or more than $\frac{3}{4}$ths, are *Hymenomycetes*, and an addition of, perhaps, three large species, will increase the proportion.

It will be observed, that the proportion of *Pyrenomycetes* is as nearly as possible, the same; and there is even a greater preponderance of *Hymenomycetes* in the Phillippines. Of the *Hymenomycetes* in Java, 40 are *Polypori*; in the Phillippines 16, being in the proportion of 1,160 1,056; and of the Java *Polypori*, 19 belong to the division (*Apus*, *Annui*), while in Cuming's collection, estimating the species in the same way as in Junghuhn's list, 9 out of 16 belong to the same division, making a proportion of 304 to 360.

The general result, therefore, agrees remarkably in the two cases, though the species are different. There is the same marked predominance of *Hymenomycetes*, and amongst these of the genus *Polyporus*, and in this genus of the stemless annual species. It would be very gratifying to have an opportunity of making a thorough comparison, but the result of the present necessarily imperfect sketch is, perhaps, not without interest.

1. Agaricus (Psalliota) *Philippinensis* (n. sp.); pileo convexo membranaceo croceo verrucoso-squamoso sericeoque, margine appendiculato; lamellis fusco-purpureis; stipite æquali gracili croceo-tomentoso. *Cum. n.* 1981.

On the ground.

Pileus 1 inch broad. Stem 1$\frac{1}{2}$ inch high, $\frac{1}{12}$th of an inch thick. Sporidia elliptic, brown-purple.—The above characters, taken from a single dried specimen, are necessarily imperfect, but the species is certainly undescribed. It is nearest, perhaps, to *Ag. echinatus* (Roth), having the habit of a *Lepiota*.

2. Lentinus (Scleroma) *connatus* (n. sp.); fasciculatus; pileis lato-infundibuliformibus lobatis tenuibus glabris umbrinis, lineis tenuissimis creberrime virgatis; lamellis confertis angustis æqualibus integerrimis longe decurrentibus fulvis; stipitibus connatis velutinis spongiosisve spithamæis ligneo-pallidis. *Cum. n.* 1993.

On very decayed wood.

Forming fasciculate tufts, the lower ones smaller, and overshadowed by the larger. Pileus 4 inches or more broad, 2½ inches deep, broadly infundibuliform, thin, variously lobed, of a beautiful umber, inclining to fawn-colour, smooth, marked all over with extremely delicate streaks, which are, however, visible to the naked eye. Gills narrow, very entire, equal, lineato-decurrent, not ending abruptly, more tawny than the pileus. Stems 5½ inches high, ¼ and ⅜ of an inch thick, slightly swollen above, connate, paler than the gills, clothed with velvety down, or spongy pubescence.

Allied to ***Lentinus exilis***, but distinguished by its long stem and mode of growth. It is a very splendid species.

3. Panus *badius* (n. sp.); pileo infundibuliformi tenui lento-membranaceo creberrime sulcato badio, velutino-pulverulento, demum glabrescente; stipite duro attenuato transversim squamoso-tomentoso, lamellisque latis furcatis integerrimis decurrentibus abrupte desinentibus ligneo-pallidis. *Cum. n.* 1983.

On decayed wood.

Pileus 3½-4½ inches broad, infundibuliform, thin, strongly and regularly sulcato-striate nearly from the centre; bay-brown, especially towards the margin, clothed with extremely short velvety pubescence, which, at length, nearly vanishes; margin entire, very thin, expanded. Gills rather broad, forked, even at the very margin, decurrent, but ending abruptly, of a pallid wood-colour, beset with short bristles, their edge quite entire and very acute; trama distinct, fibrous. Stem 1 inch or more long, 3-2 lines thick, more or less attenuated below, very hard, clothed at first with downy scales, sometimes black and wrinkled at the base.

In habit resembling *Lentinus scleropus.* It is clearly allied to *Panus velutinus* and *hirtus.*

4. Lenzites *pallida,* (n. sp.); pileo suberoso-coriaceo tenui applanato subtilissime tomentoso zonato pallide umbrino; lamellis radiantibus strictis angustis repetito-dichotomis stipiteque disciformi concoloribus. *Cum. n.* 2030.

On wood.

Imbricated and laterally connate, pale umber. Pileus 4-5 inches broad, 4 inches long, produced behind into a very short disciform stem; semicircular or flabelliform; thin, of a flexible corky substance, flat and expanded, decidedly but not deeply zoned, nearly even, clothed with extremely obscure short down, most visible at the margin, so as to give it, in general, a dull appearance; margin very thin, but rather obtuse. Gills very narrow, about ⅓ as broad as the substance of the pileus, radiating from the stem, dichotomous, here and there anastomosing, the margin of the pileus forming a little raised border round the hymenium; substance of the pileus rather paler. Intermediate between *Lenzites repanda* and *furcata.* To the former it approaches in size, but the colour is different, and the gills are narrower and far more regular.

5. Lenzites *acuta,* (n. sp.); pileo reniformi coriaceo griseo-umbrino subtilissime tomentoso zonato, margine acutissimo eleganter striato; lamellis latis tenuibus subdistantibus ramoso-furcatis repando-dentatis umbrinis. *Cum. n.* 2025.

On wood.

Pileus 3 ½ inches broad, 3 inches long, reniform, laterally connate, supported by a distinct disciform stem, of a beautiful grey-umber, or cinnamon, inclining towards the margin to tawny; marked behind with a few distant zones, and several more crowded towards the margin; slightly nodulose behind and minute, rugose about the zones, behind clothed with very short down; margin extremely acute, slightly flexuous, beautifully striate. Gills broad, radiating, rather distant, forked, truncato-dentate at the points of division; edge very acute, lacerato-dentate, of the same colour as the pileus, shot with cinereous.

An extremely pretty species, undoubtedly very near *L. striata*, but in several respects not answering to its characters. The structure of the gills and the habit resemble those of *L. tricolor*, as figured by Bulliard.

6. Lenzites *abietina*, (Fr.) *Cum. n.* 2032.

On wood.

Specimens occur, both dimidiate and resupinate, with the margin depressed.

7. Polyporus (Mesopus) *Cumingii*, (n. sp.); pileo tenui duro coriaceo cyathiformi ferrugineo pulverulento-tomentoso subazono, margine acuto; hymenio subcinnamomeo; poris minutissimis; stipite crasso extus spongioso. *Cum. n.* 1986.

On the ground.

Pileus 2 inches or more across, thin, coriaceous, but rigid, irregularly cup-shaped, very obscurely zoned, slightly rugose, ferruginous, clothed with extremely minute down, so as to give it a pulverulent appearance; margin expanded, thin, acute. Stem 1½-2½ inches high, ½ an inch thick, obtuse at the base, coated with spongy down. Hymenium cinnamon-brown, shot with ferruginous; pores very minute, not visible to the naked eye, with very thin dissepiments, about as deep as the substance of the pileus.

Very closely allied to *Pol. tomentosus* (Fr.), but distinguished by its thin, cyathiform, not thick and convex pileus. It belongs to the same series as *Pol. perennis, Montagnei* and *parvulus*, but is a much stouter plant.

8. Pol. (Mesopus) *xanthopus*, (Fr.); stipite centrali. *Cum. n.* 2035.

— stipite longo laterali castaneo. *Cum. n.* 2033, 2032.

— stipite brevissimo vel nullo. *Cum. n.* 2039.

These forms certainly belong to one species. The second appears to be the same as *P. affinis*, (Nees v. Esenb.). It is to be observed that the dark colour of the stem arises from the chestnut coating of the pileus being spread all round it, in consequence of its lateral growth. Nees von Esenbeck's figure exactly represents our plant.

9. Pol. (Pleuropus) *Amboinensis*, (Fr.) *Cum. n.* 1985.

A small form, with precisely the habit of Persoon's
auriscalpium, which is probably the same.

10. Pol. (Pleuropus) *grammocephalus*, (n. sp.); pileo t
flabellato subconchæformi integro vel sinuato carnoso l
(sicco coriaceo-rigido) pallide umbrino glabro, lineis tenui
radiantibus notato, zonato, margine acuto; stipite brevi s
scutiformi; poris minutis angulatis, dissepimentis tenui
umbrinis. *Cum. n.* 1991.

On wood.

Pileus 3-3¼ inch wide, 2¾ long, nearly orbicular or fla
lato-reniform, convex above, concave beneath; with
margin entire or somewhat lobed; thin, stiff (when dry)
coriaceous, pale umber, marked with numerous fine radia
lines; in other respects even, smooth; margin acute, so
what incurved; stem very short, but distinct, on the s
plane with the pileus, attenuated and fixed by a small sc
form base, which has no definite black cuticle. Pores min
but visible to the naked eye, angular, with thin dissepim
of a darker hue than the pileus. Substance pale umber.

Allied to *Pol. varius*.

11. Pol. (Pleuropus) *Philippinensis*, (n. sp.); ligneo-p
dus; pileo orbiculari-flabellato carnoso-lento tenui sub
vexo radiatim lineolato, postice reticulato-scabro glabro,
pite brevi laterali basi lineâ nigrâ distinctâ; poris am
subhexagonis, dissepimentis elongatis dentiformibus laci
tisque. *Cum. n.* 2038.

On wood.

Pileus 2 inches in diameter, suborbicular, rather t
slightly convex, with the margin by no means expan
marked with fine radiating lines, which form behind scabr
reticulations. Stem very short, but distinct; in the s
plane with the pileus, marked at the very base with a bl
line. Pores $\frac{1}{12}$ of an inch deep, nearly as much across, so
what hexagonal or elongated, their dissepiments elong
into slightly jagged teeth.

Allied to Pol. *squamosus*.

12. Pol. (Pleuropus) *sanguineus*, Fr.

— stipite centrali vel laterali. *Cum. n.* 2040.

— stipite subnullo. *Cum. n.* 2029.

The ordinary form of *Pol. sanguineus* does not appear in this collection. Both the states mentioned above are very dull in their colour. The second is beautifully zoned, and has the margin more waved than usual; and, without the opportunity of comparing numerous specimens would, certainly be considered distinct. This is probably what Persoon has described under the name of *Pol. flaccidus* in *Freycinet's voyage.*

13. Pol. (Pleuropus) *modestus,* (Kze). *Cum. n.* 2027.

14. Pol. (Apus) *caperatus,* (*Berk. Ann. of Nat. Hist. vol.* 3, *p.* 391). *Cum. n.* 2024.

Much resembling some states of *Pol. cuticularis,* especially in colour. It has been found abundantly by Schomburgk, in British Guiana.

15. Pol. (Apus) *velutinus,* (Fr.) *Cum. n.* 1992.

Pol. velutinus, in my account of Fungi of Van Diemen's Land, is more properly referrible to *Pol. hirsutus.* The pores are larger than in the European plant.

16. Pol. (Apus) *elongatus,* (n. sp.); pileo cuneiformi antice rotundato lobatoque postice valde attenuato, tenui coriaceo tomentoso glabrescente pallide ochraceo zonis obscurioribus lineato-striato; hymenio concavo subrufescente; poris minutis, dissepimentis tenuibus laceratis. *Cum. n.* 2023.

On wood.

Pileus 2-2½ inches long, springing from a common effused crust, cuneiform, much attenuated behind; in front rounded, and sometimes lobed, often laterally connate, very thin, but coriaceous, clothed with short soft down, which gives it an opaque appearance; pale ochraceous, with many darker smooth zones, marked with radiating lines. Hymenium concave; pores minute, but visible to the naked eye, their dissepiments thin, elongated and toothed, much deeper than the substance of the pileus, paler within.

This species, which is allied to *Pol. versicolor* and *detonsus,* has the form of *Pol. sector,* but is much larger.

17. Pol. (Apus) *intybaceus,* (n. sp.); imbricatus; pileis tenuibus coriaceis rigidiusculis multiplicibus orbiculato-reni-

formibus lobatis plicato-rugosis zonatis, brunneis sericeis; hymenio ferrugineo demum brunneo, poris mediis angulatis, dissepimentis dentatis. *Cum. n.* 1987.

Forming orbicular patches, 2½ inches in diameter; resembling very much in habit *Thelephora spadicea.* Densely imbricated and confluent; pilei reniform, or nearly orbicular, with a lateral elongation by which they are attached, variously lobed; thin and coriaceous, but rather rigid; rugoso-plicate, deep rich brown, with darker zónes; at first silky. Edge very thin and acute. Pores middle-sized, rather shallow, angular, with toothed, but not elongated dissepiments; at first, ferruginous; at length, brown, like the pileus.

18. Trametes *versatilis,* (n. sp.); longissime effusus, marginibus late reflexis; pileo tenui albido flexili contextu angustissimo implexim strigoso margine acuto strigoso-sericeo pallide badio; poris mediis angulatis vel sinuato-difformibus dissepimentis plus minùs dentato-elongatis subconcoloribus. *Cum. n.* 2026.

On charred wood.

Pileus effused for several inches, with the margin broadly reflexed, dirty white stained with green, its substance extremely thin, or scarcely visible, so that it is very flexible; clothed with coarse, somewhat matted, or erecto-fasciculate strigose down, which, towards the margin, (which is very acute, and pale bay), is depressed, and assumes a more silky appearance. Pores deep, nearly of the colour of the margin, middle-sized; at first, regular, but soon variously sinuated, with their dissepiments dentato-elongated, those towards the base or centre being a line or more long.

This species, which has also been gathered by Drummond in New Orleans, is evidently nearly allied to *Trametes lanata* and *occidentalis,* and, I may add, to *Hexagona sericea,* which though its pores are rather larger, would be better placed in this genus, which is, however, perhaps scarcely sufficiently distinct from *Polyporus.* (See Montagne's remarks in *Ann. Sc. Nat. Nov.* 1841, under *P. heteroporus*; and my own, under *Polyporus hydnoideus* and *occidentalis,* in *Annals of Nat. Hist. v.* 3, *p.* 389.)

19. Trametes *badia* (n. sp.); pileo dimidiato vel reniformi, badio tenui applanato coriaceo-rigido subzonato lineato-scabro glabriusculo, margine acutissimo pallidiore; contextu molli spadiceo; poris mediis pallidioribus subrotundis, dissepimentis integris. (*Cum. n.* 1995.)

Three inches or more broad, 1¾ inch long, dimidiate or subreniform, thin, coriaceous, rather rigid, slightly convex above, of a rich bay, with the margin paler, almost smooth, but not shining, very obscurely zoned, rough with little raised lines, especially behind, quite free from fibres; margin very acute. Pores middle-sized, roundish, paler than the pileus; dissepiments rather thin, not toothed. Substance soft and silky, of a bright brown.

Allied to *Trametes hydnoides*; but quite free from fibres, and the pores are larger and differently coloured.

20. Trametes *Beyrichii*, (Fr.) *Cum. n.* 2022.

21. Dædalea *inconcinna* (n. sp.); subimbricata, pileo coriaceo-suberoso azono pallide fulvo demum subumbrino subtiliter velutino glabrescente; poris subhexagonis elongatisque; dissepimentis tenuibus. *Cum. n.* 2021.

Imbricated. Pileus 2 inches broad, 1½ inch long, dimidiate, or flabelliform, with a spurious stem, convex, thin, tough and coriaceous, zoneless, slightly uneven, at first clothed with very short, somewhat tawny, velvety down, which in older specimens, or in the more exposed parts, vanishes; more or less scabrous behind. Hymenium consisting of more or less elongated, often hexagonal pores, with rather thin, flexible, sharp-edged dissepiments, pale wood-coloured. Substance soft.

22. Dædalea *tenuis*, (n. sp.); suberosa ligneo-umbrina; pileo tenui applanato zonato rugoso inæquabili glabriusculo; margine acutissimo; poris rectis radiantibus, interstitiis dentiformibus vel lamellatis acie acutâ. *Cum. n.* 2037.

Pileus dimidiate, 4 inches across, 2¼ long; thin, flattened, corky, marked with one or two deep, and many more superficial zones, which are waved, in consequence of the rugged, unequal surface, extremely minutely tomentose, wood-coloured

inclining to umber, especially towards the expanded, very acute margin. Pores numerous, elongated, radiating, straight; their dissepiments dentate or lamellate, with an acute edge.

A distinct species, resembling, in many respects, *Dædalea quercina*, but with the habit of *Lenzites trabea*.

23. Hexagona *tenuis*, (Fr.) *Cum. n.* 1984.

24. Hexagona *apiaria*, (Fr.) *Cum. n.* 1989.

CLADODERRIS, *Pers. in Freyc. Voy.*

(Cymatoderma, *Jungh.*)

Hymenium inferum dendroïdeo-venosum, cum pileo rigido coriaceo, epidermide cartilagineâ obsito, multiplici-sulcato cristatoque conformi.—Fungus *elegantissimus epixylon.*

25. Cladoderris *dendritica.*—Thel. dendritica. *Pers. in Freyc. Voy. tab.* 1, *fig.* 4.—Cymatoderma elegans. *Jung. Nov. Gen. Fl. Jav.*

— junior. *Cum. n.* 1988.

— adulta. *Cum. n.* 1990.

— hymenio scabro. *Cum.* 2036.

Pileus, 5 inches in diameter, infundibuliform, thin, rigid, coriaceous, covered with a thin cartilaginous epidermis, rugoso-plicate; the main folds crested with toothed prorefully kept in mind. I have no doubt that this is a good genus, and the name of Persoon is entitled to ty. It is nearly allied to *Craterellus*.

Stereum *perlatum*, (n. sp.); umbonato-sessile papyra- oriaceum, subtiliter velutinum umbrinum, zonis gla- badiis, contextu umbrino sericeo; hymenio cinereo. *n*. 2034.

cus 8 inches broad, or more, by the lateral confluence o plants.

ve inches long, coriaceous, but thin and flexible, umbo- sessile, dimidiate or suborbicular, entire, or with a rounded lobes, sulcate, slightly wrinkled longitudinally, velvety, by no means fasciculato-pilose, of a rich umber- n, with smooth dark bay zones; margin extremely Hymenium smooth, zoned from the furrows of the s, cinereous. Substance soft, silky, umber, but paler the pileus.

le nearest ally of this magnificent species appears to be *eum Boryanum*.

. Corticium *hydnatinum* (n. sp.); resupinatum, mycelio culato-piloso vulpino ambitu fimbriato, hymenio lævi aceo. *Cum. n.* 2187.

n trunks covered with moss.

rming a somewhat orbicular patch, 3 inches in diameter; nycelium consisting of strigose tufts, of foxy-brown fila- ts, resembling the hymenium of an *Hydnum*. Hy- ium, in the specimen before me, sparingly developed, oth, ochraceous.

his curious plant appears to be allied to *Corticium cri- n* (Fr.) There is, however, a circumstance connected it, which makes it very worthy of notice; viz., the ence of threads creeping over the fascicles of the *my- m*, containing dark green rings, which easily separate them when they are broken, and altogether resembling e which are found in *Dichonema* and *Cœnogonium*. It is ous, too, that in the same collection there is a species of *onema*, as I believe, described below, in which these ring-bracing threads are not present. I find them, however, in a species of *Dictyonema*, found in Guiana, and other parts of the New World, in which a distinct hymenium is produced in little patches, as in *Cora*. It is probable, then, that in every case, these threads are parasitical, and referrible to the genus *Calothrix*. Montagne points out, in *Belanger's Voyage*, the resemblance between these threads and *Oscillatoria muscorum* (Ag.) There is one peculiarity in those of the present plant, viz., that the external tube appears to be regularly reticulated; but this character is not easily seen till the rings have slipped out, though while they are *in situ*, they have, in consequence, occasionally a striated appearance, like that represented by Montagne, in the free rings under *Dichonema sericeum*, at E. The felting of the *Calothrix* with the real threads of the mycelium, may be explained by the growth of both keeping pace with each other; so that no sooner do new flocci spring from the mycelium, than a new crop of the *Calothrix* encroaches on them. I have given a figure of the parasite, which may be called *Calothrix reticulata*, and thus characterised:

Calothrix *reticulata*; filis brevibus obtusis reticulatis; annulis globoso-depressis vivide cæruleo-viridibus; diametro 2-brevioribus.

coriaceo-suberosa deorsum rotunda, supra compressa ramosa fulvo-velutina, apicibus pallidis sericeis. *Cum. n.* 2218.

About 1½ inch high, fasciculate, often connate; each individual springing from a little scutate base, generally cylindrical below, compressed above and irregularly branched, rich brown, clothed with tawny down; apices paler, compressed, silky.

The specimens, unfortunately, are not yet in fruit, but the species appear to be very distinct.

30. Sphæria (Cordyceps) *pileiformis*, (n. sp.); suberosa, ramosa e basi tuberosâ; clavulis hemisphericis rufescentibus ostiolis nitidis nigris exasperatis. *Cum. n.* 1980.

Springing from a black wrinkled simple or forked elongated sclerotoid tuber, exactly like that of *Sphæria pedunculata*, (Dicks.) and with which it is perfectly continuous. The peduncles arise immediately from the tuber; or, in case they are broken, fresh peduncles are given from off the sides. In the specimens before me, there are only two heads on each plant: but indications exist that more are occasionally produced. The peduncles are black and smooth, but finely striate in the dry plant, much attenuated above, where they are paler, with a rufous tinge, and gradually expanded into the subhemispherical head. Heads barren below, with the border rounded, above pale rufous, convex, rough with the scattered shining prominent black ostiola. Perithecia small, ovate, with a short neck.

This curious *Sphæria* is almost intermediate between *Cordyceps* and *Poronia*. I do not know any species to which it is allied. The contents of the perithecia were immature. The form of the head somewhat resembles that of *Asterophora lycoperdoides*.

Tab. VII. fig. 6.—*a.* S. pileiformis, *nat. size*, *b.* section of head, *magnified*.

31. Sphæria (Pulvinata) *peltata*, (Jungh.), carnosa disciformis centro suffulta, subtus albida pubescens, supra glabra pallido-umbrina, (alutacea, Jungh.) punctata. *Cum. n.* 2028.

[illegible] : 1 inch or more in diameter, disciformis, peltate, dirty white, with a single umber tinge, clothed with adpressed [illegible]; below smooth, umber, dotted with the orifices of the perithecia. The individuals from which the above character is drawn up, are, unfortunately, not mature. The perithecia are extremely minute, and evidently imperfect, but the structure of the ostiolum is quite distinct. The fertile coat is very brittle, cracking and separating from the white stroma. It appears, as far as can be judged from the short specific character, to be Junghuhn's *Sph. peltata.* (See Ann. Sc. Nat. Nov. 1841.

Tab. VII. fig. 7.—*a.* S. peltata, *nat. size*, *b.* portion of upper surface, *magnified.*

32. Sphaeria (Caespitosae.) *[illegible]*, (n. sp.); peritheciis subglobosis rugulosis astomis nigris opacis collabescendo-sinuatis depressis caespites seriato-confluentes efformantibus; ascis curtis obtusis; sporidiis semi-ellipticis brunneis. Cum. *n.* 2163.

Bursting through the crust of different *Lichens*, and constituting tufts; which often become confluent, and form long wavy lines, with single tufts, and even single perithecia interspersed.

Resembling externally *S. cupularis*, but not collapsing so

Tab. VII. fig. 9.—*a.* section, *magnified, b.* sporidium, slightly *magnified.*

34. Tulostoma *pusillum* (n. sp.); stipite curto æquali farcto subsquamoso; peridio magno papyraceo; ore prominulo mammoso. *Cum. n.* 1981.

Half immersed in sand. Plant ¾ of an inch high. Stem ½ of an inch high, ⅛ thick, white, within stuffed with fine threads, subsquamose; quite distinct from the peridium. Peridium large in proportion, ovate or globoso-depressed, papyraceous, scaly below, and soiled with particles of sand; smooth above, or slightly pulverulent; mouth small papilliform, not cartilaginous. Sporidia rufous, globose, very minute, echinulate; flocci branched.

Tab. VII. fig. 10.—*a.* Tulostoma pusillum, *nat. size, b.* section, *ditto*; *c.* sporidia, highly *magnified, d.* flocci, *ditto.*

There is a species from Madras, in Sir W. J. Hooker's herbarium, with just the same habit, but twice the size in every part, which differs in having a flat fringed, or rather appendiculate orifice, and which may be characterised,

Tulostoma *Wightii,* (n. sp.); stipite æquali subsquamoso, peridio papyraceo ovato-globoso; ore vix prominulo appendiculato.

1 ½ inch high. Stem 1 inch high. Peridium ¾ of an inch broad. Sporidia not echinulate.

35. Dichonema *erectum* (n. sp.); olivaceum, erectum flabelliforme, stipite distincto, margine fimbriato olivaceo-fusco. *Cum. n.* 2234.

In sand.

1½ inch high, ¼ of an inch broad, membranaceous, obovato-flabellate, with a distinct flat stem, olive-green shaded off into olive-brown towards the shortly fimbriate margin. Threads branched, the branchlets consisting of obtuse moniliform filaments.

Tab. VII. fig. 11.—*a.* Dichonema erectum, *nat. size, b.* flocci, highly *magnified.*

Contributions towards a FLORA OF BRAZIL, *being an enumeration of a series of Collections of Plants, made in various parts of Brazil, from* 1836 *to* 1841; *with brief descriptions of the new Genera and Species.*—By GEORGE GARDNER, ESQ.

An ardent desire to travel in some tropical country, and to collect its Botanical productions, led me, early in the year 1836, to visit Brazil. Principally patronized in my undertaking by His Grace the late Duke of Bedford, and Sir William J. Hooker, I was also strongly recommended by them to make choice of the Brazilian Empire, as the country most likely to reward my researches with a rich harvest of new and rare vegetable productions. It is true that it had been frequently visited by several German and French naturalists; but no English one, with the exception of the intrepid Burchell, had penetrated the interior; and large tracts, particularly in the north, still lay open as virgin fields for the investigations of some future traveller. To these, therefore, I was anxious to proceed.

I trust to be able, ere long, to lay before the public, in another form, a full account of my wanderings during the period of my absence from England; but, in the mean time, new and beautiful plants which were discovered, particu- ly near their summits, sufficiently rewarded the toil and tigue of such an undertaking. In passing through the ense forests, what numbers of beautiful *Orchideæ*, of deli- ate and graceful *Ferns*, strange *Dorstenias*, tall and slender- temmed *Palms*, grotesque *Begonias*, and broad-leaved *Ma- antaceæ*, are constantly meeting the eye! But still more nteresting are the productions of the less wooded, and more pland and rocky tracts. There *Orchideæ* also abound, rowing on the bare and exposed rocks; and the mind for a ime becomes quite bewildered among the *Gesnerias*, the *Esterhazias*, the *Luxemburgias*, the *Vellozias*, the *Barbacenias*, he *Fuchsias*, the *Lobelias*, the *Bromeliaceæ*, the brilliant- lowered *Salvias*, the *Alstrœmerias*, the *Amaryllideæ*, the eautiful *Melastomaceæ*, the epiphytal *Cacteæ*, the *Utricula- ias*, (which we are accustomed to see in our latitudes desti- ute of foliage, here bearing leaves 2 and 3 inches long,) the *Proteaceæ*, the *Andromedas*, the *Vacciniums*, the *Gualtherias*, he strange *Compositæ*, the *Escallonias*, and the beautiful *Gentianeæ*, forming the mass of the vegetation of these regions. About 600 species were collected on this my first visit to these mountains.

Having, by this time, acquired some knowledge of the language of the country, and of the mode of travelling, I was anxious to proceed to the northern provinces, and em- barking at Rio, in September 1837, reached Pernambuco early in October. The packet being allowed to remain two days at Bahia, I had thus an opportunity to make one or two excursions in the neighbourhood of that city, and to collect a considerable number of plants. Three months were at this period spent in the province of Pernambuco, during which I made a collection of about 500 species. The coun- try here is flat and unpicturesque, and everything bespeaks a dry atmosphere, and an arid soil. The woods are gene- rally low, and abound in *Melastomaceæ*, *Myrtaceæ*, *Legu- minosæ*, and *Rubiaceæ*; while the open tracts are rich in *Compositæ*; and the swamps and small lakes teem with *Cy-*

peraceæ and *Gramineæ*, and other aquatic plants, peculiar t tropical America. Almost no *Ferns*, no *Begoniaceæ*, *Piperaceæ*, or *Orchideæ*, are to be met with.

The months of February, March, and April of 1838, were spent in exploring the province of Alagoas, situated between Pernambuco and Bahia, and in making a voyage up the Rio San Francisco; during which, I narrowly escaped falling a victim to dysentery, which is endemic along its banks, and which forced me to retreat sooner than I had intended to the coast. After suffering many privations from exposure and from want of provisions, I returned to Pernambuco about the end of April, bringing with me upwards of 200 species; a small number, considering the extent of country explored; but, my journeyings being made late in the dry season, the greater part of the herbaceous vegetation was scorched up, and the trees on the hilly tracts had shed their leaves, according to their annual custom, the low forests there being deciduous. Some fine *Leguminosæ* and *Loranthaceæ* resulted from this expedition. In many places, the dry, arid, and hilly rocky places along the banks of the river abound with *Cacteæ* of various forms, some of the larger angular species attaining a height of nearly 30 feet, with stems more than 3 feet in circumference.

The months of May, June, and part of July, the depth o the rainy season, were spent in Pernambuco, and during thi time I completed my arrangements for a long journey int the interior, being desirous of exploring the high land which lie to the westward of the province of Piauhy, betwee the Rio Paranahiba and the Yocintins. Finally, quitting Pernambuco about the middle of July, in a coasting schooner I reached, in four days, Aracaty, a small town in the provinc of Ceará, about 3½ degrees to the north of Pernambuco and from whence there is the easiest access to the interio Here I purchased horses, and commenced that journey to whic I had always been anxiously looking forward, since my arrival in Brazil, and which, in the end, proved so much long than I had originally intended, and attended with such da gers, difficulties, and privations, as were enough to have deterred me from undertaking it, could I have foreseen them previously to leaving the coasts.

Proceeding in a S.W. direction, through a flat country, at first covered with *Palm forests*, and then consisting of arid, sandy *Campos*, or thin woods of low deciduous trees, a slow journey of about three hundred miles brought me to a flat mountain-chain, being the N.E. branch of the *Serra Geral*, which runs from S. to N. through Central Brazil. Making the small town of Crato, situated at the bottom of the eastern side of this range, my head-quarters, I remained in its neighbourhood nearly five months, and acquired an herbarium of about six hundred species of plants. I would not have stopped here so long, particularly as the people were a most barbarous set among whom I lived, but the desert country to the westward cannot be traversed till the rains have set in. The wet season ending much earlier in the interior than on the coast, my journey to Crato was less productive than I had anticipated; the herbaceous vegetation, in particular, being almost entirely dried up. I only saw enough to convince me that fine collections could have been made, had I gone over the same ground two months earlier.

At Crato, I was so fortunate as to be able to engage a young Englishman, who had travelled a good deal in the interior, to accompany me as an assistant, and having dispatched my collections to the coast, we started, in the beginning of February, 1839, for Oeiras, the capital of the province of Piauhy, distant about four hundred and fifty miles, in a westerly direction. The rains had now set in about a fortnight, and the whole face of the country was verdant and flowery. It is quite astonishing with what rapidity vegetation takes place in these deserts, after the first few showers have fallen. The annual grasses spring up through the white sand, the trees burst into leaf and bloom, and the perennial herbaceous plants, which during the drought were apparently destroyed, throw up their flowering stems in an incredibly short period. We found, however, that if there be too little water here in the dry season, we had by far too much of it in the wet one, as we generally got ourselves well drenched every day, and often experienced great difficulty in passing the flooded rivers. I had also much trouble in preserving the plants which I collected during the journey, owing to the great humidity of the atmosphere, and the want of proper means to dry the paper.

Four months were devoted to the investigation of the botany of the country around Oeiras; and notwithstanding that it is in general flat, and with but little diversity of soil, upwards of four hundred species were added to my former collections. Shortly after my arrival, a revolutionary movement took place to the westward, and the country being in the hands of the rebels, I was prevented from penetrating further in that direction. Unwilling to retrace my steps, I determined to proceed southward, to Rio de Janeiro, through the great inland provinces of Goyaz and Minas Geraes; though but ill provided for such an undertaking, particularly in pecuniary matters, the disturbed state of the country rendering it impossible to receive money from the coast. I had, however, my profession to depend on, and I knew that if much money would not be gained by it, a great deal of expense might be saved. The country to the southward and west, being also in rather an unsettled state, I was advised by influential persons not to pursue this proposed journey, as I should run a great risk of losing my life by so doing; but my strong desire to pass through a hitherto unexplored country, determined me not to listen to their advice and having made all the preparations my limited means would allow, we left Oeiras towards the latter end of July.

A journey of somewhat more than two months brought us to Duro, an Indian mission, situated on an elevated tableland, in the north-eastern extremity of the province of Goyaz On the route, upwards of five hundred species of plants were collected. After passing through the flat, arid and burning *Campos* of Piauhy, we entered upon a more elevated and consequently to the Botanist, more interesting country, abounding in *Vellozias*, beautiful *Melastomaceæ*, *Compositæ*, *Diplusodons*, and curious *Eriocaulons*. This country is, for the most part, uninhabited, and night after night, we had to sleep in the woods, dreading the attacks of a wandering tribe of Indians, who had committed several depredations shortly before, on some Brazilian settlers, further to the west. We often suffered much from not being able to procure provisions, and not unfrequently from want of water. A fortnight was spent among the Indians at Duro, during which time I made several botanical excursions in the neighbourhood, and added largely to my stores. Leaving Duro, we proceeded to Natividade, a small town, about thirty leagues distant to the west, and the heavy rains having now commenced, we were obliged to remain here upwards of three months, during which period, I gathered many noble plants, particularly on the mountains of the vicinity. From Natividade we continued our route to Arrayas, another insignificant town, about thirty leagues in a S.E. direction, and situated on the western flank of the *Serra Geral*, which divides the province of Goyaz from those of Minas Geraes, and Pernambuco. Being a fine region for botany, and the rains not yet having ceased, I staid here about two months, amassing a splendid collection of *Compositæ*, *Vellozias*, *Diplusodons*, *Gentianeæ*, *Melastomaceæ*, *Vochysias*, *Kielmeyerias*, and many other curious plants, peculiar to the upland grassy *Campos* of the interior of Brazil.

The proper season for travelling in these countries having now arrived, I became desirous to resume my expedition, so as to reach Rio, if possible, before the setting in of the next rains; and quitting Arrayas about the beginning of May, 1840, a painful, but interesting journey of forty-six days, through the palm swamps and arid uninhabited mountain-tracts on the *Serra das Araras* brought us to the *Villa de San Romão*, situated on the Rio San Francisco, in the province of Minas Geraes. A few days were spent here, to recruit both ourselves and the horses; and in packing up my Goyaz collections, amounting to upwards of 1,400 species. Another journey of about a month brought us to the capital of the Diamond district, having had to pass through a flat and uninteresting country, suffering by day from the powerful heat of the sun, and by night from the attacks of insects. About three weeks were spent in this elevated, rocky and treeless district, so famous for its diamonds; and certainly no part of Brazil can be more gratifying to the Botanist, for let him turn where he will, he knows not what to grasp at first, being lost in admiration among the numerous lovely *Vellozias*, *Barbacenias*, *Melastomaceæ*, *Luxemburgias*, *Andromedas*, *Vacciniums*, *Esterhazias*, *Gerardias*, *Physocalyces*, *Lupines*, *Eriocaulons*, and the strange pine-like *Compositæ* which are peculiar to this region.

After leaving the Diamond district, several weeks were spent in the Gold districts, and large collections were obtained from the mountains near Cocaes, Gongo Soco, Sabará, Ouro Preto, and Marianna. The number of species altogether found in Minas Geraes I have not yet been able to determine, as my collections from that province remain still unarranged. Starting from Marianna, about the beginning of October, I reached Rio de Janeiro on the 1st of November, 1840; having thus been occupied on my overland journey about two years and four months, and bringing with me all the collections which had been made from July, 1839. Three months were spent in Rio, arranging part of these to send home, and three more were devoted to a second visit to the Organ Mountains, where another fine harvest rewarded my researches, for the most part different from what had been found during my first visit. On this occasion, I made an excursion to the banks of the Rio Parahiba, going back by Canta Gallo, and the Swiss colony of Novo Friburgo. On my return to Rio, I had only a few days to prepare for returning to England, and, early in May, embarked in a ship bound for Liverpool, viâ Maranham, in the north of Brazil. At the latter place, we stopped about three weeks, which enabled me to add considerably to my stores. Finally leaving the shores of Brazil on the 10th of June, I arrived safely at Liverpool with all my collections, on the 11th of July, 1841, having been absent five years and two months.

To make known these collections, and to contribute my mite towards a *Flora of Brazil*, I have been induced to draw up an enumeration of my plants, with descriptions of such *new Genera and Species* as they may be found to contain, and occasional observations on those which have already been published. It is only those that are engaged in prosecuting the study of Exotic Botany, who can appreciate the labour attending such an undertaking, it being no easy matter to determine what are, and what are not, known species, since so many Brazilian plants have of late years been published in various English, German and French periodicals, and other works. Indeed, the task of preparing this enumeration could never have been undertaken, but for the kindness of Sir William Hooker, and George Bentham, Esq.; who, with the most generous liberality, have allowed me the freest use of their rich Libraries and Herbaria, with the benefit of their personal advice, whenever doubts or difficulties occurred. To Dr. Lindley, I am also deeply indebted, for the obliging manner in which he has consented to determine the *Orchideæ*; and likewise to Mr. J. Smith, the able Curator of the Royal Botanic Gardens at Kew, who has kindly offered to assist me in investigating the *Ferns*. In drawing up the catalogue, I have preferred following the running numbers of my list* to any other arrangement, as a great many species have yet to be examined and distributed. Where a species occurs without a number, it is to be understood that the plant was not found in sufficient plenty to allow of the specimens being distributed.

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* The entire collection, which Mr. Gardner has brought to England, amounts to little short of six thousand species, including the Acotyledonous plants, and is, as a whole, in the most beautiful state of preservation imaginable, and consisting of remarkably fine specimens. The majority of them are already dispersed among the subscribers, and the remainder are in a course of preparation for that purpose. The numbers, given with those collections, will be found to correspond with the numbering of the following species.—Ed.

PART I.

Plants from the neighbourhood of Rio Janeiro.

1. Rollinia *longifolia. St. Hil. Fl. Bras. Mérid.* 1. *p.* 29. *t.* 5. *Endl. et Mart. Fl. Bras. fasc.* 2. *p.* 17.—Anona dolabripetala. *Raddi, D.C. Prodr.* 1. *p.* 86.

HAB. In woods on the lower parts of the Corcovado, not uncommon. *Fl.* Aug. Sept.

2. Rollinia *fagifolia. St. Hil. Fl. Bras.* 1. *p.* 29. *Endl. et Mart. Fl. Bras. fasc.* 2. *p.* 19.

HAB. On the ascent of the Corcovado. *Fl.* Sept. Oct.

3. Nasturtium *officinale. R. Br. DC. Prodr.* 1. *p.* 137.

HAB. On the Corcovado, in humid places by the aqueduct. *Fl.* Sept. Oct.

4. Senebiera *pinnatifida,* Var. *β incisa, DC. Prodr.* 1. *p.* 203.

HAB. Common everywhere about Rio. *Fl.* all the year.

5. Cleome *rosea. Vahl. ex DC. Prodr.* 1. *p.* 239. *Bot. Reg. t.* 960.

HAB. Common in open rocky places, in woods near Rio. *Fl.* July, Aug.

6. Cleome (Pedicellaria) *villosa* (sp. n.) herbacea aculeata

8. Amphirox *longifolia*. *Spreng. Cur. post. p.* 88.—Spathularia longifolia. *St. Hil. Mem. Mus.* 11. *p.* 492. *t.* 24.

HAB. Rare in woods, on the lower parts of the Corcovado. *Fl.* Sep.

Frutex 8-16-pedalis.

9. Polygala *paniculata*. Linn. var. β. *Bras. D. C. Prodr.* 1. *p.* 329.

HAB. Common on dry banks about Rio, particularly by the Aqueduct. *Fl.* all the year.

The leaves of this species have the same kind of pellucid glands which are described in *P. variabilis*.

10. Securidaca *lanceolata*, *St. Hil. Fl. Bras. Mérid.* 2. *p.* 69.

HAB. Common in woods, about Rio. Fl. in Aug. and Sep.

11. Sida *carpinifolia*. *Linn. fil. D. C. Prodr.* 1. *p.* 461. *St. Hil. Pl. n. s. t.* 50.

HAB. Very common about Rio, growing even in some of the less frequented streets.

12. Sida *plumosa*. *Cav. Diss. t.* 12. *f.* 4.—Malachra plumosa, *Desrous. in Lam. Dict.* 2. *p.* 686. *D. C. Prodr.* 1. *p.* 440.

HAB. Common in grassy fields at Rio Comprido, near Rio. *Fl.* Sep.

13. Helicteres *ovata*. *Lam. Ency.* 3. *p.* 88.—H. Brasiliensis. *Mikan.*—H. corylifolia, *Nees et Mart. Nova Act. Bon.* 12. *p.* 44.

HAB. In woods by the Aqueduct, on the Corcovado. *Fl.* Aug. Sept.

14. Triumfetta *eriocarpa*. *St. Hil. Fl. Bras. Mérid.* 1. *p.* 288. *G. Don, Dict.* 1. *p.* 546.

HAB. Common in waste and cultivated places, about Rio. *Fl.* all the year.

15. Erythroxylon *subrotundum*. *St. Hil. Fl. Bras.* 2. *p.* 99. *Mart. Erythrox. p.* 68.—var. β. pedunculis duplo triplove longioribus.

HAB. Common in bushy places, about Rio. *Fl.* Aug. Sept.

My specimens agree with St. Hilaire's description in every thing except the length of the peduncle, which he says is about 1 line long; while in my plant, it is from two to three lines. In his differential character he states the stamens to be nearly twice the length of the pistil, but in the detailed description the styles are said to be twice the length of the stamens, which I find to be the case in my specimens. In my collections from the province of Alagoas, this species also exists, (No. 1254), and it seems to be the plant which Martius, in his *Monograph*, refers to, with a number, as having been found by me at Pernambuco. It has, also, the long peduncles of my Rio specimens. *E. subrotundum* is nearly allied to *E. Carthaginense*, Jacq., but differs essentially in not having the two lateral veins, which run nearly parallel with the mid-rib, as in *E. Coca.*

16. Erythroxylon *frangulæfolium. St. Hil. Fl. Bras. Mérid.* 2. *p.* 99. *Mart. Erythrox. p.* 73.

HAB. Common in bushy places, near Rio. *Fl.* July Aug.

17. Bunchosia? *laxiflora*, (sp. n.); erecta glaberrima, foliis ovalis acutiusculis membranaceis nervosis reticulatis eglandulosis, racemis lateralibus terminalibusque laxis aphyllis folio duplo fere longioribus, pedicellis infra medium bibracteolatis.

HAB. Bushy places by the sea side near Rio. *Fl.* Aug.

HAB. Among bushes on the Moro do Flamingo, near Rio. *Fl.* July, Aug.

18 (2). Stigmaphyllum *Gayanum. Ad. Juss. in Herb. Hook.*

HAB. Rare among bushes on the Corcovado. *Fl.* Sept. Frutex scandens. Petala flava.

19. Oxalis *Barrelieri. Jacq.—D.C. Prodr.* 1, *p.* 690.

HAB. Common in dry bushy places, about Rio, as on the *Moro do Flamingo*. *Fl.* Aug. Sept.

20. Simaba *glandulifera* (sp. n.); foliis magnis impari-pinnatis multijugis, foliolis oblongo-lanceolatis utrinque attenuatis glabris apice glandulosis, panicula magna composita rufo-tomentosa.

HAB. In woods by the aqueduct on the Corcovado. *Fl.* Aug. Sep.

Arbuscula 10-pedalis. Folia 2-3 ped. longa. Foliola 3-4 poll. longa, 8 lin. lata. Calyx parvus, cupularis, quinquefidus. Petala 6 lin. lata, oblonga, obtusa, coriacea, pubescens. Stamina 10. Filamenta basi villosa. Carpella rufo-villosa. Styli in 1 coaliti. Stigmata simplicia. Fructus ignotus.

It seems rather strange that this species of *Simaba*, which is not uncommon on the ascent of the Corcovado, producing its large panicles of highly odoriferous yellow flowers in the months of August and September, should not be noticed in any of the numerous works which have been published on Brazilian botany. Yet, after considerable research, I have been obliged to come to this conclusion, and to describe it as a new species.

21. Casearia *Commersoniana. St. Hil. Fl. Bras. Mérid.* 2, *p.* 235.

HAB. On the ascent of the Corcovado. *Fl.* Sept. Oct.

22 et 23. Calliandra *cylindrocarpa. Benth. MSS.*

HAB. Common in dry and rocky places, about Rio. *Fl.* Sept. Oct.

A description of this plant will shortly appear in Bentham's *Synopsis of the Mimoseæ.*

24. Machærium *oblongifolium. Vogel in Benth. Comment. Legum. p.* 36.

HAB. Common on dry wooded hills, about Rio. *Fl.* Sept.

25. Æschynomene *tecta. Vogel in Linnæa,* 12, *p.* 87.

HAB. Among bushes in marshes, about Rio. *Fl.* July, Aug.

26. Cassia *rotundifolia. Pers. Syn.* 1. *p.* 456.—Cassia bifoliata. *D.C. Prodr.* 2. *p.* 501.

HAB. Common in dry open places, about Rio. *Fl.* July, Aug.

27. Stylosanthes *viscosa. Sw.—D.C. Prodr.* 2, *p.* 317.

HAB. Common in arid sandy places, about Rio. *Fl.* all the year.

28. Sophora *tomentosa. Linn.*—S. littoralis. *Schrad. D.C. Prodr.* 2, *p.* 96.

HAB. Common on the sandy shores of Brazil, from Rio northward. *Fl.* during the greater part of the year.

29. Crotalaria *vitellina. Ker, Bot. Reg. t.* 447. *D.C. Prodr.* 2, *p.* 132.

HAB. Common in dry sandy places, about Rio. *Fl.* Aug. Sept.

29 (2). Zornia *reticulata. Sw.* var. δ; *punctata. Vogel in Linnæa,* 12, p. 58.

HAB. In open sandy places, about Rio. *Fl.* Aug.

The bracts are not sufficiently reticulated in my plant to identical with Peruvian ones in the Hookerian Herbarium.

31. Jussiæa *scabra*. *Willd.*—*J. hirta*. *Lam. Dict.* 3, *p.* 331.—*J.* Marcgravii. *D.C. Prodr.* 3, *p.* 58.

Hab. Common in moist marshy places, about Rio. *Fl.* July.

32. Cuphea *Balsamona*. *Cham. et Schlect. in Linnæa*, 2, *p.* 263.—Balsamona Pinto. *Vandelli Flora Lusit. et Bras. Spec.* *p.* 30. *t.* 4.

Chamisso and Schlectendal describe their plant as an annual, while mine is certainly shrubby; and so is a Mexican one, otherwise agreeing with mine, in Sir William Hooker's Herbarium, sent by those Botanists from that of Berlin.

33. Pleroma *Fontanesianum*.—Lasiandra Fontanesiana. *D.C. Prodr.* 3, *p.* 130.—Melastoma granulosa. *Bot. Mag. t.* 214. *Flor de Quaresma;* nom. vernaculum.

Hab. Very common in woods in the province of Rio de Janeiro. *Fl.* from March till July.

According to Bentham (*Hook. Journ. of Bot.* 2, *p.* 288.) *Pleroma*, of Don, does not differ from *Lasiandra* of D.C.; and as Don's name is the older of the two, I have retained it.

34. Clidemia *crenata*. *D.C. Prodr.* 3, *p.* 158.

Hab. Common by the Aqueduct, on the Corcovado. *Fl.* July, Aug.

35. Clidemia *marginata*. *D.C. Prodr.* 3, *p.* 156.

Hab. In woods, on the Corcovado. *Fl.* Sept.

36. Clidemia *amygdaloides*. *D. C. Prodr.* 3, *p.* 156.

Hab. In woods by the Aqueduct, on the Corcovado. *Fl.* Aug.

37. Miconia *collina*. *D.C. Prodr.* 3, *p.* 185.

Hab. In woods, on the Corcovado. *Fl.* Oct. Nov.

38. Clidemia *biseptena*. *D.C. Prodr.* 3, *p.* 164.

Hab. In woods, on the Corcovado. *Fl.* Sept.

Among my own specimens under this number, I find one of C. *Nianga* (*D.C. Prodr.* 3, *p.* 163), which makes it possible that the two species were mixed up in the general distribution.

39. Rhynchanthera *dichotoma*. *D.C. Prodr.* 3, *p.* 131.

Hab. Common in marshes, about Rio. *Fl.* Aug. Sept.

40. Pleroma *argenteum.*—Lasiandra argentea. *D.C. Prod*
. *p.* 131.

Hab. On exposed rocky places, about Rio, as on the *I*
do Flamingo. *Fl.* July, Aug.

41. Pleroma *heteromallum. Don.* *D.C. Prodr.* 3, *p.* 151.

Hab. Common on dry elevated rocky places, about
Fl. Aug. Sept.

42. Clidemia *leptostachya,* (n. sp.); ramulis teretibus, pet paniculisque pilis rufis hispidis, foliis petiolatis oblo acuminatis 5-nerviis subcrenulatis ciliatis superne n medio setosis extus glabriusculis subtus sparse set paniculis axillaribus gracilibus paucifloris, calycibus rufis hispidissimis.

Hab. In virgin forests, on the Corcovado. *Fl.* Oct.

Frutex 5-pedalis. Folia 5-6 poll. longa, 9 lin. lata, n exterioribus submarginalibus, interioribus supra basin c et ideo folia fere triplinervia. Petala parva alba acumina

Nearly allied to *C. amygdaloides,* but well distinguishe its much longer leaves, which are also less hairy, and rower in proportion, and by the longer and more sle panicles.

45. Melothra *Fluminensis*, (sp. n.); foliis profunde cordatis subquinquangularibus mucronato-denticulatis margine subciliatis superne (siccitate albo-punctatis) glabriusculis inferne petiolisque pilosiusculis, floribus longe pedunculatis, masculis racemosis, fœmineis solitariis, fructibus oblongis glabris.

HAB. In hedges and moist bushy places, about Rio. *Fl.* Aug. Sept.

Flores dioici.—♂. Calyx 5-dentatus. Petala acuta vix ciliata. Stamina 3.—♀ Stylus brevis corona parva integra cinctus. Stigma tripartitum non fimbriatum.

46. Passiflora (decaloba) *elliptica*, (sp. n.); foliis integris ellipticis vel ovato-ellipticis basi rotundatis penninerviis supra glabris nitidis subtus puberulis, pedicellis solitariis petiolo brevioribus, calycis segmentis oblongis petalis subconformibus, coronæ filamentis seriei exterioris erectis lineari-spathulatis petalis dimidio brevioribus, seriei interioris basi brevissime connatis.

HAB. In woods, on the ascent of the Corcovado from Rio Comprido. *Fl.* Sept.

Frutex subscandens. Folia 3-4 poll. longa, 2 circiter lata. Stipulæ ignotæ. Cirrhi simplices elongati. Bracteæ nullæ. Flores albi. Ovarium dense pubescens.

47. Passiflora *setacea*. *D.C. Prodr.* 3, *p.* 329.—P. violacea. *Vellozo, Fl. Flum.* 9. *t.* 84.

HAB. Common on dry bushy hilly places, at Rio Comprido, near Rio de Janeiro. *Fl.* Sept.

47 (2). Passiflora *racemosa*. *Brot.—D.C. Prodr.* 3, *p.* 329.

HAB. Common on wooded hills, about Rio.

48. Passiflora *Kermesina*. *Hort. Berol.—Lindl. Bot. Reg. t.* 1633.—*Hook. Bot. Mag. t.* 3503.

HAB. Not uncommon in woods, on the Corcovado. *Fl.* Aug. Sept.

49. Passiflora (decaloba) *piligera*, (sp. n.); ramis pedicellis petiolisque pubescentibus, foliis cordatis divaricato-bilobatis trinerviis eglandulosis supra pilosiusculis subtus dense pubescentibus, petiolis eglandulosis, pedicellis geminis pe-

tiolo longioribus, calycis segmentis lineari-oblongis acutis extus pilosis, sepalis glabris brevioribus, coronæ filamentis seriei exterioris filiformibus petalis paulo longioribus seriei interioris brevissime connatis.—Passiflora bilobata *Vellozo Fl. Flum.* 9, *t.* 78. (*non Juss.*)

HAB. Rare in bushy places, about Rio. *Fl.* Sept.

Folia 2½-2 poll. lata, lobis mucronatis. Stipulæ subulatæ 4 lin. longæ. Bracteæ nullæ. Ovarium oblongum, glabriusculum.

50. Passiflora (Cieca) *flexuosa*, (sp. n.); ramis flexuosis, foliis basi rotundato-subcordatis 5-nerviis 3-lobatis eglandulosis subtus glabris supra ad nervos pilosiusculis, lobis lateralibus acutis divaricatis, medio quadruplo majoribus lanceolatis acutiusculis, petiolis supra pubescentibus medio biglandulosis, pedicellis geminis petiolo longioribus, calycis segmentis 5 oblongis obtusiusculis, sepalis nullis, coronæ filamentis seriei exterioris filiformibus sepalis multo brevioribus, seriei interioris breve connatis fimbriatis.—Passiflora olivæformis. *Vellozo, Fl. Flum.* 9, *t.* 83. (*non Mill.*)

HAB. In bushy places, at Rio Comprido, near Rio. *Fl.* Aug.

Folia 3-4 poll. longa, 1½-2 lata, lobis mucronatis. Stipulæ

HAB. Common on orange-trees, about Rio. *Fl.* Aug. Sept. This is one of the many *Loranthi*, called by the Brazilians *Erva de Passerinho.*

53 (2). Coccocypselum *cordifolium. Nees. et Mart.—D.C. Prodr.* 4, *p.* 397.

HAB. In shady woods, on the Corcovado. *Fl.* Aug. Sept.

53 (3). Coccocypselum *aureum. Cham. et Schlect.—D.C Prodr.* 4, *p.* 397.

HAB. Common on moist shady banks, by the Aqueduct, on the Corcovado. *Fl.* Aug. Sept.

53 (4). Psychotria *intermedia*, (sp. n.); glaberrima, foliis lanceolatis acuminatis basi subcuneatis membranaceis, stipulis subconcretis biaristatis, cyma terminali pedunculata folio duplo breviore, radiis compressis 3 verticillatis et 1 centrali, calyce obtuse dentato, floribus 5-andris.

HAB. In virgin forests, on the Corcovado. *Fl.* Oct. Frutex 3-4 pedalis. Folia 3-3½ poll. longa, 8-12 lin. lata. Intermediate between *P. leiocarpa* and *P. nitidula.*

53 (5). Anotis *Saltzmanni. D.C. Prodr.* 4, *p.* 433.

HAB. In moist places, common about Rio. *Fl.* all the year.

54. Richardsonia *scabra. St. Hil. Pl. Us. t.* 8. *D.C. Prodr.* 4, *p.* 567.—Richardia *scabra. Linn.*

HAB. Common in dry sandy soils, about Rio. *Fl.* July, Aug.

55. Diodia *Radula. Cham. et Schlect.—D.C. Prodr.* 4, *p.* 565.

HAB. In sandy places at Praya Grande. *Fl.* Aug. Sept.

56. Acicarpha *spathulata. R. Br.—D.C. Prodr.* 5, *p.* 3.

HAB. Common on sandy sea-shore, at Rio. *Fl.* July, Aug.

57. Acanthospermum *xanthioides. D.C.—var.* γ, *glabratum, D.C. Prodr.* 5, *p.* 522.

HAB. Dry exposed places on the *Moro do Flamingo*, near Rio. *Fl.* July.

58. Stifftia *chrysantha. Mikan, Del. Bras. fasc.* 1. *D.C. Prodr.* 7, *p.* 26.

HAB. Not uncommon on dry bushy hills, by the Aqueduct, and on the ascent of the Corcovado. *Fl.* from June till Aug.

59. Vernonia *splendens*. *Less.*—*D.C. Prodr.* 5, *p.* 18.

Hab. In woods and hedges, common about Rio. *Fl.* July.

60. Mikania *scandens*. *Willd.*—*D.C. Prodr.* 5, *p.* 199.—Eupatorium scandens. *Linn.*

Hab. Common in bushy places, and in hedges, about Rio. *Fl.* Aug. Sept.

61. Mikania *glomerata*. *Spreng. Syst.* 3, *p.* 421.—an M. *diversifolia*. *D.C. Prodr.* 5, *p.* 201 ?

Hab. Only once met with, in a wood by the Aqueduct, on the ascent of the Corcovado from Rio Comprido. *Fl.* July

62. Vernonia *eupatoriifolia*, var. β *pauciflora*. *D.C. Prodr.* 5 *p.* 37.

Hab. In woods on the Corcovado. *Fl.* Sept.

✓ 63. Ageratum *conyzoides*. *Linn.*—*D.C. Prodr.* 5, *p.* 108.

Hab. Common, everywhere about Rio. *Fl.* all the ye round.

64. Eupatorium *sordescens*. *D.C. Prodr.* 5, *p.* 167.

Hab. Common in hedges and bushy places, about Rio. *F* July, Aug.

65. Baccharis *Lundii*. *D.C. Prodr.* 5, *p.* 404.

Hab. Common on dry hilly places, about Rio. *Fl.* July Aug.

lections from the interior of Brazil, there are two or three still undescribed species, and in Sir William Hooker's Herbarium, I find two others, also new.

67. Baccharis *dracunculifolia*. *D.C. Prodr.* 5, *p.* 421.

Hab. Common in bushy hilly places, as on the *Moro do Telegrafo*. *Fl.* Sept. Oct.

68. Gnaphalium *Gaudichaudianum*. *D.C. Prodr.* 7, *p.* 226.

Hab. On rocks by the sea, near Rio. *Fl.* Sept.

69. Trixis *divaricata*. *Spreng.—var. β exauriculata, D.C. Prodr.* 7, *p.* 69.

Hab. Common in hedges and bushy places about Rio. *Fl.* Aug. Sept.

70. Spilanthes *Lundii*. *D.C. Prodr.* 5, *p.* 622.

Hab. On moist banks, by the Aqueduct. *Fl.* July. Aug.

71. Wedelia *paludosa*. *D.C. Prodr.* 5, *p.* 538.

Hab. In a marsh, at Rio Comprido, near Rio de Janeiro. *Fl.* Aug. Sept.

71 (2). Mutisia *speciosa*. *Hook. Bot. Mag. t.* 2705. *D.C. Prodr.* 7, *p.* 5.

Hab. In bushy places, on the Corcovado. *Fl.* Sept. Oct.

71 (3). Conyza *Chilensis*. *Spreng.—D.C. Prodr.* 5, *p.* 378.

Hab. In waste and cultivated places, about Rio. *Fl.* Sept. Oct.

71 (4). Erigeron *Bonariense*. *Linn.—D.C. Prodr.* 5, *p.* 289.

Hab. Common in waste and cultivated places. *Fl.* all the year.

This species, which is much commoner in Brazil than E. *Canadense*, is readily distinguished from it by its longer, less branched, and more compact panicle.

71 (5). Leria *nutans*. *D.C. Prodr.* 7, *p.* 42.—Tussilago *nutans*. *Linn.*

Hab. Dry shady places on hills, about Rio. *Fl.* July, Aug.

71 (8). Elephantopus *Martii*. *Graham.—D.C. Prodr.* 6, *p.* 86.

Hab. Common everywhere, about Rio, and always in flower.

71 (9). Centropogon *Surinamensis*. *Presl.—D.C. Prodr.* 7, *p.* 345.—Lobelia Surinamensis. *Linn.*

HAB. In moist bushy places, about Rio. Not uncommon the Aqueduct. *Fl.* Sept. Oct.

72. Gesneria *aggregata. Ker, Bot. Reg. t.* 329. *Hook. Mag.* 2725.—*D.C. Prodr.* 7, *p.* 529.

HAB. On rocks by the sea-side, on the *Moro do Flamin* *Fl.* July, Aug.

72 (2). Nematanthus *longipes. D.C. Prodr.* 7. *p.* 544.

HAB. On shady rocks in woods on the Corcovado. Aug. Sept.

73. Hypocyrta (Codonanthes) *carnosa,* (sp. n.); hirt caule decumbente radicante, foliis ovatis carnosis integ enerviis utrinque hirtellis, floribus axillaribus solitar calycis lobis subulatis, corollis subcampanulato-tubulo lobis rotundatis patentibus.

HAB. On the trunks of trees, in dense forests on the Cor vado. *Fl.* Sept.

Fruticulus, super arbores scandens. Folia crasse carn subtus violacea. Corolla uncialis, alba, intus fusco- culata.

73 (2). Baxtera *loniceroides. Rich. Consp. n.* 3456.—Har onia loniceroides. *Hook. Bot. Mag. t.* 2699.

HAB. Rare, on rocks by the sea-side, as at Praya Verme *Fl.* Sept. Oct.

75. Tabernæmontana *læta. Mart. Herb. Fl. Bras. n.* 104.

HAB. Common on dry bushy hills at Rio Comprido, near Rio de Janeiro. *Fl.* Sept.

76. Asclepias *Curassavica. Linn.—Ker, Bot. Reg. t.* 81.

HAB. Common everywhere about Rio. *Fl.* all the year.

77. Oxypetalum *umbellatum*, (sp. n.); volubile, foliis cordatis oblongo-lanceolatis acutis glabriusculis, pedunculis multifloris cymoso-umbellatis, petalis linearibus erectis sursum reflexis, coronæ foliolis oblongis truncatis, retinaculis apice nudis.

HAB. Dry bushy places at Rio Comprido, near Rio de Janeiro. *Fl.* Sept.

Caulis suffrutescens, volubilis, teres, glaber. Folia opposita, margine subciliata, supra viridia subtus pallida. Pedunculi petiolo longiores circiter 10-flori. Pollinis massæ basi obtusæ. Retinacula linearia obtusa.

This species is somewhat related to *O. appendiculata*, (Mart.); but differs by its narrower leaves, fewer-flowered corymbs, and inappendiculate retinacula.

77 (2). Oxypetalum *Banksii. R. et Schult. Syst.* 6, *p.* 91. *Mart. Nov. Gen.* 1, *p.* 48, *t.* 29.

HAB. Very common in hedges and bushy places, about Rio.

78. Bignonia *rupestris*, (sp. n.); ramis teretibus verrucosis, foliis conjugatis glabris ellipticis obtusis venosis, venis utrinque prominulis, corymbis terminalibus subpaniculatis, calyce coriaceo campanulato truncato margine ciliato, corolla ventricoso-dilatata extus tomentosa, lobis dilatato-rotundatis acuminatis.

HAB. Open rocky places on the Corcovado, and at Rio Comprido. *Fl.* Sept.

Frutex scandens. Foliola 3½-4 poll. longa, circiter 2 poll. lata. Corolla bipollicaris, rosea.

This species is nearly allied to *B. corymbifera* (Vahl), to which, indeed, I had referred it at the time of finding it; but differs from the plant figured by that author in having a more compact inflorescence, and flowers about twice as large.

78 (4). Bignonia *comosa. Cham. in Linnæa, vol. 7, p. 693.*

Hab. In woods by the Aqueduct, common. *Fl.* July, Aug.

78 (5). Bignonia *araliacea. Cham. in Linnæa, 7. p. 683.*

Hab. On the *Moro do Flamingo.* *Fl.* Aug. Sept.

78 (6). Jacaranda *tomentosa. R. Br. in Bot. Mag. sub t. 2327. Lindl. Bot. Reg. t.* 1103.

Hab. On wooded hills about Rio. Common on the *Moro do Flamingo.* *Fl.* July, Aug.

Lindley, who has given an excellent figure of this plant, has omitted the reference to Brown's first notice of it in the *Bot. Mag.*; and G. Don (*Dict.* 4. *p.* 226), quotes t. 2327 of that work as a figure of this species, whereas it is *J. ovalifolia (Br.)* which is there represented: *J. tomentosa* being only mentioned incidentally. Lindley takes Mexico to be its native country, which is probably a mistake, as it grows abundantly wild in the neighbourhood of Rio de Janeiro.

78 (7). Ipomæa *pes-capræ. Sweet, Hort. Brit.* 289. *G. Don, Dict.* 4, *p.* 265.—Convolvulus pes-capræ. *Linn.*

Hab. Very common on the sandy sea-shores about Rio, and all along the coast of Brazil. *Fl.* all the year.

79. Pharbitis *Nil. Chois. Convolv. Orient. p.* 57.—Convol Nil. *Linn.*

Hab. In bushy places, common about Rio. *Fl.* Aug.

79 (2). Ipomæa (Strophipomæa) *nigricans,* (sp. n.); caule striato ad insertiones foliorum subhirsuto, foliis septenato-palmatis, lobis lanceolatis grosse sinuato-dentatis acutis mucronatis glabris, pedunculis petiolo duplo longioribus corymboso-paniculatis multifloris, sepalis magnis oblongis acutis glabris exterioribus majoribus.

Hab. Among bushes on the Corcovado. *Fl.* Sept.

Tota planta nigrescens. Caulis fruticosus. Folia magna glaberrima, lobis 3-4 poll. longis, 10-12 lin. latis. Pedunculi crassi, glabri, 6-9 flori. Pedicelli 10-12 lin. longi, apice incrassati. Sepala exteriora 10 lin. longa, 5 lin. lata. Corolla glabra, campanulata, alba.

80. Ipomæa (Strophipomæa) *crotonifolia,* (sp. n.); caule

tereti cinereo-tomentoso, foliis cordato-ovatis apice acute mucronatis tomentosis petiolatis, pedunculis folia superantibus cymoso-umbellatis multifloris, sepalis obovato-oblongis obtusissimis glabris exterioribus minoribus.

HAB. Bushy places, on the Corcovado, and at Rio Comprido.

Caulis fruticosus ramosus. Folia subtus cinereo-tomentosa, venosa, 2½-3 poll. longa, 1-1½ poll. lata. Petiolus 6 lin. longus. Pedunculi petiolis crassiores, juniores corymboso-umbellati; bracteæ ovato-lineares acutæ; pedicelli 2-3 lin. longi villosi. Sepala submembranacea 4 lin. longa. Corolla campanulata, infundibuliformis, pallide cœrulea.

81. Messerschmidia *salicifolia*, (sp. n.); villosa, foliis oblongo-lanceolatis acuminatis subtus nervosis cinereo-tomentosis, spicis lateralibus cymosis ramosis.

HAB. In bushy places, on the *Moro do Flamingo*. *Fl.* Sept.

Frutex subscandens, villosus. Folia alterna, petiolata, 2½-3 poll. longa, 9-10 lin. lata, supra villosa, subtus incano-tomentosa, nervosa, nervis petiolisque rufo-tomentosis. Flores in cyma laterali subsessili, spicis inferioribus ramosis. Calyx quinquepartitus, laciniis linearibus erectis pilosis. Corolla infundibuliformis, extus pilosa: tubo cylindrico; limbo patente quinquefido. Antheræ subsessiles. Germen ovatum glabrum. Stylus crassus. Stigma capitato-conicum.

82. Messerschmidia *membranacea*, (sp. n.); foliis petiolatis ovato-oblongis basi subcordatis acutiusculis membranaceis supra pubescentibus subtus subtomentosis, spicis lateralibus terminalibusque dichotomo-paniculatis.

HAB. Among bushes, on the *Moro do Flamingo*. *Fl.* Sept.

Frutex subscandens; ramis teretibus pubescentibus. Folia 3-3½ poll. longa, 1½ poll. lata, membranacea. Flores subsessiles, spicati. Calyx 5-partitus, laciniis linearibus obtusiusculis pilosis. Corolla viridis, extus pilosa, intus glabra. Germen glabrum. Stigma capitato-conicum, basi margine tumido cinctum.

83. Tournefortia *glabra*. *Aubl. Guian.* 1, *p.* 118.

HAB. In moist shady wooded places, about Rio Comprido. *Fl.* Aug. Sept.

This, I have no doubt, is the plant of Aublet, although I can nowhere find it mentioned as having been found in Brazil. It is a large subscandent shrub. The flowers and berries are white.

84. Cordia *Curassavica. R. et Sch. Syst.* 4, *p.* 460. Varronia Curassavica. *Jacq.*

Hab. Common on dry bushy hilly places, about Rio. *Fl.* Aug. Sep.

85. Solanum *argenteum. Dunal, Syn. p.* 19. *G. Don, Dict.* 4. *p.* 417.

Hab. In woods, common, about Rio and on the ascent of the Corcovado. *Fl.* Aug. Sept.

86. Solanum *paniculatum. Linn.—Dunal, Mon. Sol. p.* 206.

Hab. In dry bushy places, common about Rio. *Fl.* Aug. Sep.

86 (2). Solanum *asterophorum. Mart. Herb. Fl. Bras. n.* 25

Hab. On the ascent of the Corcovado. *Fl.* Oct.

86 (3). Physalis *angulata. Linn.* (*var.* leviter pubescens.)

Hab. In dry places by the Aqueduct on the Corcovado. *F* Sept.

87. Metternichia *Principis. Mikan, Delect. Bras.* 3, *t.* 1. *Mart. Herb. Fl. Brasil. n.* 451.—Lisianthus Ophiorrhiza. *Vell. Fl. Flum. vol.* 2. *t.* 78.

HAB. Common everywhere about Rio, and in flower all the year.

91. Leonurus *Sibiricus*. *Linn.—Benth. Labiat. Gen. et Sp. p.* 520.

HAB. Common in waste and cultivated places about Rio. *Fl.* July, Aug.

This plant is certainly not indigenous to Brazil, for I am informed by my friend Dr. Ildefonso Gomez that it was introduced about 30 years ago, by seeds brought accidentally from China. So perfectly naturalized has it now become, that I have found it near habitations in almost every part of Brazil which I visited.

92. Marsypianthes *hyptoides*. *Mart.—Benth. Labiat. Gen. et Sp. p.* 64.—Hyptis inflata. *Spreng. Syst. Veg.* 2, *p.* 731.

93. Hyptis *multibracteata*. *Benth. Labiat. Gen. et Sp. p.* 100.

HAB. In moist shady places at Rio Comprido. *Fl.* Aug. Sept.

94. Hyptis *inamœna*. *Benth. Labiat. Gen. et Sp. p.* 104.

HAB. In moist bushy places, near Rio Comprido. *Fl.* Aug. Sept.

95. Stachys *arvensis*. *Linn.—Smith, Eng. Bot. t.* 1154. *Benth. Labiat. Gen. et Sp. p.* 550.

HAB. In waste and cultivated places about Rio. Common by the Aqueduct, beyond the Santa Tereza Convent. *Fl.* July, Aug.

96. This plant, which is allied to *Justicia Rohrii* of Vahl, and *Beloperone? ciliata*, (Nees, in Mart. Herb. Fl. Brasil. n. 457,) belongs to a genus about to be established under the name of *Orthotactus* by Nees von Esenbeck, and as this species, which is common about Rio, will no doubt be published by him, I refrain at present from naming it.

HAB. In woods, on the Corcovado. *Fl.* July, Aug.

97. Hyptis *pectinata*. *Poit.—Benth. Labiat. Gen. et Sp. p.* 127.—Nepeta pectinata. *Linn.*

HAB. Common everywhere about Rio. *Fl.* July, Aug.

98. Avicennia *tomentosa*. *Linn.*

HAB. Common along the muddy sea-shore, intermixed with

Rhizophora Mangle, and *Laguncularia racemosa*. *Fl.* Au Sep.

99. Stachytarpheta *Jamaicensis*. *Vahl*, *St. Hil. Plant. Us. d Brésil. t.* 93.

Hab. Common in waste places and roadsides, about Ri *Fl.* July, Aug.

100. Ægiphila *cestrifolia*, (sp. n.): ramis tetragonis, foli breve petiolatis oppositis oblongo-lanceolatis utrinque acut adpresse villosis, cymis axillaribus multifloris pedunculati calycibus adpresse villosis, dentibus brevibus latis ac minatis.

Hab. On the ascent of the Corcovado, from Rio de Janeir *Fl.* Sept.

Frutex 10-pedalis, ramis rufo-villosis. Folia 4-6 po longa, 1½-2 poll. lata. Petiolus 4 lin. Pedunculi, ramiq cymarum, rufo-villosi. Flores tetrameri. Corolla infun buliformis, longe tubulosa, laciniis oblongis obtusis; fi menta infra lacinias inserta iisdem duplo longiora. Anthe oblongæ. Stylus apice bifidus calycem superans, coro brevior. Fructus ignotus.

ILDEFONSIA.

101. Ildefonsia *bibracteata.*

Hab. On a shady bank by the *Agoas Novas*, on the ascent of the Corcovado from Rio Comprido.

Suffrutex erectus, ramosus, 2-pedalis. Rami alterni, obtuse tetragoni, glabri. Folia opposita, lanceolata, vel ovato-lanceolata, basi subattenuata, acuminata, glabra, margine subscabra, 2-2½ poll. longa, 6-9 lin. lata. Pedunculi axillares, solitarii, uniflori, apice bibracteati, circiter 6 lin. longi, sursum deflexi. Bracteæ subulatæ pilosiusculæ. Calyx 5-partitus, laciniis lanceolatis, æqualibus, subfoliaceis, nervosis, 4 lin. longis. Corolla campanulata semiuncialis et ultra, violacea; limbo quinquefido, lobis subæqualibus, obtusis. Antheræ oblongæ, biloculares, loculis divaricatis, æqualibus, muticis. Capsula subglobosa, glabra. Stylus persistens, basi demum fissus.

This genus, which is allied to *Herpestes* and *Sphærotheca*, but abundantly distinct from them and the other genera of the tribe, I have named after Dr. Ildefonso Gomez, a talented physician of Rio de Janeiro, who has devoted much of his leisure time to the investigation of the botany of his native country, and to whom I am indebted for great kindness during my last visit to Rio. In the first edition of Steudel's *Nomenclator Botanicus*, there is an *Ildefonsia* of Schott, evidently named after the same individual, but it is not taken up in the last edition.

102. Plumbago *scandens. Linn.*

Hab. In hedges and bushy places, common about Rio. *Fl.* July, Aug.

103. Buginvillea *spectabilis. Willd. Sp. Plant.* 2. *p.* 348.—Josepha augusta. *Vellozo Fl. Flum.* 4. *t.* 16.

Hab. On bushy hills, at Jurujuba Bay. *Fl.* Aug. Sep.

I have met with at least two species of this genus in Brazil, besides the present. One of them is very similar to it in habit, a large shrub with a peculiarly straggling habit, but its leaves are almost glabrous, narrower, and of a less coriaceous texture than those of *B. spectabilis*. The flowers are also of a paler colour. The other is a very distinct species, being a tree, from 20 to 30 feet high, with a stem about a foot in diameter at the base. It has a very striking appearance from a distance, the branches being densely covered with bright rose-coloured flowers, which are smaller than those of the other two species. I found it in the month of April, 1841, on the Minas Geraes side of the Rio Parahiba, about half a day's journey below Col. Leite's new bridge. The specimens which I collected were unfortunately lost, through the carelessness of my servant.

104. Mogiphanes *Brasiliensis. Mart. nov. gen.* 2. *p.* 34. *t.* 133. *et* 134. *f.* 3. *Spreng. cur. post. p.* 107.

Hab. Common everywhere about Rio. *Fl.* July, Aug.

105. Begonia *sanguinea.—Raddi. Link et Otto, Abbild. t.* 13.

Hab. On moist shady rocks, on the Corcovado. *Fl.* Aug.

106. Begonia *villosa. Lindl. Bot. Reg. t.* 1252.

Hab. In marshes, at Rio Comprido, common. *Fl.* all the year.

The hairs on the upper part of my plant are more rufous than they are represented in Dr. Lindley's figure.

107. Begonia *vitifolia. Schott, in Spreng. Cur. post. p.* 407.

Hab. On moist shady rocks, on the Corcovado. *Fl.* Sep.

107 (2). Begonia *longipes. Hook. Bot. Mag. t.* 3001.

Hab. In moist shady woods, on the Corcovado. *Fl.* Sep.

Hab. In *Capociras*, common about Rio. *Fl.* July.

112. Julocroton *nigrescens. Mart. Herb. Fl. Bras.* 847.

Hab. Common everywhere about Rio. *Fl.* July.

113 *et* 114. These I believe to be new species of *Croton;* but I refrain from describing them because Dr. Klotzsch is at present engaged upon a *Monograph of the Euphorbiaceæ;* and a set of my plants being in his hands, those of this natural order will no doubt find a place in his forthcoming work. Till this book appears I shall only refer my *Euphorbiaceæ* to their genus or order; and at some future period a correct list of their names will be published.

115. Dorstenia *arifolia, Lam.—Hook. Exot. Flora,* 1. *t.* 6. *Hook. Bot. Mag. t.* 3074.

Hab. In woods, common about Rio. *Fl.* Aug. Sept.

116. Dorstenia *Contrayerva. Linn.—Spreng. Syst.* 3. *p.* 777.

Hab. In woods, common about Rio. *Fl.* Aug.

116 (2). Dorstenia *hispida. Hook. Icon. Plant. sub t.* 220. (in *annot.)*

Hab. Rare, on the banks of the Rio Comprido, near Rio de Janeiro, and not on the Organ Mountains as stated by Sir William Hooker. On my return to Rio in the end of the year 1840, I again found one or two specimens of it in a wood at Tijuca.

117. Sponia *micrantha. Decaisne, Herb. Tim. p.* 170.—Cethis micrantha, *Sw.*

Hab. Common on the Corcovado. *Fl.* July.

118. Steffensia *Gaudichaudiana. Kunth, in Linnæa* 13. *p.* 638.

Hab. In shady virgin forests, on the Corcovado. *Fl.* Aug. Among my own specimens under this number, I find one of *S. salicariæfolia,* (Kunth), which makes it probable that the two species were mixed up at the general distribution.

119. Schillera *colubrina, Kunth in Linnæa, vol.* 13. *p.* 655.—Piper colubrinum, *Link.*

Hab. In dense virgin forests, on the Corcovado. *Fl.* Aug.

119 (2). Peperomia *Corcovadensis,* sp. n.; caule procumbente

radicante subramoso quadrangulo, foliis alternis ovato-ellipticis obtusis trinerviis carnoso-coriaceis glabris, spicis terminalibus solitariis.

HAB. On moist shady rocks, by the Aqueduct on the Corcovado *Fl.* Aug.

Caulis procumbens, in nodos radicans, carnosus, quadrangulus, lævigatus, glaber; ramis raris, suberectis. Folia alterna, 6 lin. longa, 3 lin. circiter lata, carnoso-coriacea, punctata, ovato-elliptica, obtusa, trinervia, utrinque glabra. Petioli vix 1 lin. longi, glabri. Spica terminalis, solitaria, 6-8 lin. longa.

119. *Acalyphæ* sp. (vide supra n. 113.)

HAB. In hedges and among bushes, about Rio. *Fl.* Sept.

An erect shrub, 4-6 feet high.

120. Brassavola *tuberculata. Hook. Bot. Mag. t.* 2878. *Lindl. gen. et sp. of Orchid. p.* 114.

HAB. Common on rocks by the sea, near Rio, as on the *Moro do Flamingo*, where it grows almost to the water's edge. *Fl.* July, Aug.

121. Prescottia *plantaginea. Lindl. in Hook. Exot. Flora, t.* 115. *Gen. et sp. Orchid. p.* 453.

HAB. Among bushes, in hilly places, common about Rio. *Fl.* July, Aug.

121. Pelexia *triloba. Lindl. gen. et sp. Orch. p.* 483.

HAB. In moist shady places, on the Corcovado. *Fl.* July.

121. Prescottia *micrantha. Lindl. gen. et sp. Orch. p.* 455.

HAB. In moist bushy places, by the Aqueduct, on the ascent

HAB. On dry rocks at Praya Vermelha. *Fl.* July.

Species pusilla, floribus pseudobulbisque purpureo-fuscis. *M. uncatæ*, (quæ *M. nana*, Hook.) et *aciculari* affinis. *Lindley.*

124. Oncidium *pumilum. Lindl. Bot. Reg. t.* 920. *Gen. et Sp. p.* 205.

HAB. On trees, not uncommon. My specimens were obtained from a Calabash tree, at Rio Comprido. *Fl.* Sept.

125. Burlingtonia *rigida. Lindl. Sert. Orchid. t.* 36.

HAB. On *Crescentia Cujute,* at Rio Comprido. *Fl.* Sept.

125 (2). Oncidium *pulvinatum. Lindl. Bot. Reg.* 1839. *t.* 42.

HAB. On large trees, in virgin forests, on the Corcovado. *Fl.* Sept.

126. Maxillaria *tricolor (Lindl.* MSS.); pseudobulbis ovalibus sulcatis diphyllis, foliis oblongis coriaceis basi angustatis, scapis unifloris e squamis imbricatis acutis pseudobulbum novum vestientibus, sepalis ovato-lanceolatis acuminatis petalis conformibus, labello carnoso trilobo cucullato laciniis rotundatis intermedio undulato, callo solitario in medio. *Lindley.*

HAB. On rocks, in a wood at Rio Comprido. *Fl.* Sept.

Flores albo-virescentes; sepalis petalisque purpureo-maculatis, labelli lobis apice pseudobulbisque atroviolaceis. *Lindley.*

127. Maxillaria *Harrisoniæ. Hook. Bot. Mag. t.* 2927. *Lindl. Bot. Reg. t.* 897. *Gen. et Sp. p.* 148.

HAB. On moist shady rocks, at Praya Vermelha. *Fl.* Aug.

128. Cattleya *Forbesii. Lindl. Bot. Reg. t.* 953.

HAB. On low trees and on rocks, common; generally near the sea. *Fl.* July.

128 (2). Ætheria *cæspitosa* (*Lindley* MSS.); pusilla, foliis lanceolatis basi angustatis ciliatis erectis scapo villoso æqualibus, floribus villosis, racemo secundo dissitifloro (nutante ?), bracteis lanceolatis ovario ovato duplo-longioribus, labello lineari canaliculato apice spathulato acuto medio subangulato, basi utrinque callis obsoletis marginalibus denticulatis instructo. *Lindley.*

HAB. Sparingly, on the stem of a large tree, in a dense forest on the Corcovado. Found in Sep.

128 (3). Spiranthes *Gardneri* (Lindley MSS.); hispido-pilosa, foliis rosulatis acuminatis venosis basi angustatis, scapo stricto filiformi, bracteis foliaceis acuminatis canaliculatis patentissimis inferioribus vacuis distantibus superioribus floriferis multo minoribus, sepalis obtusis, labelli lamina rotundata apiculata. *Lindley.*

HAB. Sparingly on the stems of trees, on the Corcovado. *Fl.* Sept.

This very curious little species has no close affinity to any species at present published. It belongs to section B. of *Euspiranthes*. (*Lindley*.)

129. Phrynium *coloratum*. *Hook. Bot. Mag. t.* 3010.

HAB. Common in shady virgin forests, on the Corcovado. *Fl.* July, Aug.

130. Heliconia *angusta* (*Vellozo, Flora Flum.* 3. *t.* 20, sin descr.); foliis angusto-oblongis basi acutis apice acuminati inflorescentia glaberrima, spathis elongatis distichis mult floris, filamento sterili lanceolato acuminato.

HAB. In dense virgin forests, on the Corcovado. *Fl.* Aug.

Folia 2-pedalis et ultra, 3 poll. lata. Spatha longe acum nata, rubro-coccinea, circiter 6-flora. Pedunculi nulli. P part inhabiting the mountains of the interior. It often forms a bush, 5-6 feet high, and is a most beautiful object when covered with its large white flowers, resembling those of *Lilium candidum*.

133. Hypoxis *decumbens. Linn.*—(*var.* *β. Brasiliensis.*) *R. et Schul.—Veg.* 7. *p.* 762.

Hab. Common, in shady places by the Aqueduct on the Corcovado. *Fl.* all the year.

134. Tillandsia *stricta. Soland.—Sims, Bot. Mag. t.* 1529. *R. et Schul.* 7. *p.* 1206.

Hab. On trees, common about Rio. *Fl.* Sept.

135. Tradescantia *Fluminensis* (*Vellozo Flora Flum.* 3. *t.* 152. sine descr.); caule basi procumbente radicante, ramis lineæ alternæ pubescente, foliis ovatis vel ovato-ellipticis acutis glabris, vaginis margine pilosis ciliatisve, umbellis terminalibus axillaribusque solitariis sessilibus, pedicellis calycibusque pilosiusculis.

Hab. On moist shady rocks, by the Aqueduct on the Corcovado. *Fl.* Aug.

Caulis basi procumbens, nodosus, et ad nodos radiculas paucas emittens. Rami juniores parce pilosi, pilis in lineam alternatim decurrentibus. Internodia 2-2½ poll. Folia alterna, 2-3 poll. longa, 12-16 lin. lata; floralia minora, nervosa, striata. Vaginæ campanulatæ, nervosæ, 3-4 lin. longæ, extus pilosæ, margine longe ciliatæ. Umbellæ sub 10-floræ. Pedicelli post anthesin deflexi, 6-8 lin. longi, apice pilosi. Cal. lacinia ovata, obtusa, concava, uninervia, ad medium dorsi pilosa, margine glabra. Petala alba. Filamenta villo niveo. Germen oblongum, glabrum. Stylus apice incrassatus. Capsula trigona, trivalvis, loculi 1-spermi. Semina oblonga, pulverulenta, rugosa.

136. Merostachys? *capitata. Hook. Icon. Plant. t.* 273 *et* 274.

Hab. Common, in low woods on the ascent of the Corcovado, from the Larangeiras. *Fl.* Aug.

137. Olyra *cordifolia. H. B. et K. nov. gen.* 1. *p.* 198. *Kunth Enum.* 1. *p.* 68. *Nees in Mart. Fl. Bras.* 2. *p.* 308.

Hab. In woods, common on the ascent of the Corcovado. *Fl.* Aug. Sep.

138. Paspalus *plantagineus*. *Nees ab Esenb. in Mar* *Bras*. 2. *p*. 69.—P. Corcovadensis. *Raddi Agr*. 27.

Hab. In woods, on the Corcovado. *Fl*. Aug.

139. Setaria *caudata*. *R. et S. Syst*. 2. *p*. 495.—I caudatum. *Lam*.

Hab. In woods, on the Corcovado. *Fl*. Sep.

140. Chloris *pycnothrix*. *Trin*.—*Nees ab Esenb. in Ma* *Bras*. 2. *p*. 423.—Chloris radiata, *Raddi*, *Agrost*. 52.

Hab. In dry exposed places, common on old walls, the Aqueduct. *Fl*. July.

141. Sporobolus *minor*. *Kunth Enum*. 1. *p*. 212.—Vil cissima, (*Var*. β.) *Trinius*, *Agrost*. *p*. 74.

Hab. Dry exposed places on the ascent of the Cor *Fl*. Aug.

142. Anatherum *bicorne*. *Palis. de Beauv. Agr*. *p*. 128 *f*. 11. *Nees ab Esenb. in Mart. Flora Bras*. 2. *p*. Andropogon bicornis. *Linn*.

Hab. Common everywhere about Rio, in open moist

143. Trichachne *insularis*. *Nees in Mart. Fl. Bras*. 2. Panicum leucophæum. *H. B. et Kunth Nov. gen*. 1. *Kunth Enum*. 1. *p*. 124.

Hab. Waste and cultivated places, about Rio. *Fl.* Sept.

148. Pleurostachys *stricta*. *Kunth Enum.* 2. *p.* 286.

Hab. Common, in woods on the ascent of the Corcovado. *Fl.* Aug.

149. Trilepis *Lhotzkiana*. *Nees ab Esenb. in Edin. New Phil. Journ. July* 1834, *p.* 267. *Kunth Enum.* 2. *p.* 535.

Hab. On dry exposed rocky places, common on the Moro do Flamingo. *Fl.* Sept.

150. Eleocharis *ochreata*. *Nees. ab. Esenb. in Linnæa* 9. *p.* 294.

Hab. In moist sandy places at Rio Comprido. *Fl.* Aug.

Contributions *towards a* Flora *of South America.*—*Enumeration of Plants collected by* Mr. Schomburgk *in British Guiana. By* George Bentham, Esq. F.L.S.

(*Continued from the First Series, vol.* 4. *p.* 323).

FILICES.

Determined and described by J. Smith, A.L.S.

POLYPODIACEÆ.

Tribe Polypodieæ, *J. Sm.*

694. Grammitis *serrulata Sw. Willd. Sp. Pl.* 4. *v.* 141. British Guiana, *Schomburgk, n.* 441.

695. Hecistopteris *pumila. J. Sm.*—*Gymnogramma pumila Spreng. Syst. Suppl. p.* 31. *Kunze Analect. Pter. t.* 8. *f.* 1. British Guiana, *Schomburgk*; Surinam, *Hostmann.*

Hecistopteris (J. Sm. *gen. nov.*) Char. Gen. Costa solitaria, simpliciter v. dichotome furcata. Venulæ rectæ, liberæ. Receptaculum sporangiferum partem superiorem venularum occupans, soros formans oblongo-lineares, simplices v. furcatos, nudos.—Rhizoma repens, breve squamis parvis lanceolatis membranaceis fuscis munitum. Frondes vix pollicem longæ, glabræ, planæ, lineares v. cuneatæ et laciniatæ, v. furcatæ, basi valde attenuata stipiteformi, laciniis acutis. Sori plerumque confluentes.

When the first part of the paper on the Genera of Ferns was published in the fourth volume of the Journal of Botany, I had not seen specimens of this, the smallest of ferns, and only knew it by description and the figure above quoted. On viewing its forked free venation, and the form of its sori, there can be little doubt of its agreeing with the technical character of *Gymnogramma;* but I have elsewhere shown that very unnatural combination of species will often occur if too strict a regard is paid to the technical characters upon which genera are determined. Such is the case with the present subject, which in aspect and habit is at variance with any species of the several groups of *Gymnogramma*. The creeping paleaceous rhizoma, and the simple structure of the frond, evidently point to a relationship with *Monogramma* and *Grammitis*, as characterised by me; but it is distinguished from these genera by the absence of a continuous straight midrib. Occasionally, some of the fronds are simply linear, and bear only one sorus, being therefore, analogous to *Monogramma;* showing that *Hecistopteris* is only distinguished from that genus by the cuneiform, and usually laciniated character of its frond, and consequent forked venation.

696. Polypodium *confusum*, *J. Sm. Herb.* (1839); frondibus lineari-lanceolatis utrinque attenuatis glabris pinnatisectis, laciniis oblongo-linearibus alternis decurrentibus, sinubus acutis, soris 2-8 confluentibus, receptaculis immersis. British Guiana. *Schomburgk.*—I first detected this to be distinct from *P. trichomanoides* while examining a number of St. Vincent specimens of that species, with which the present one was intermixed, and evidently they were gathered as one species; but this is distinguished from *P. trichomanoides* by the absence of the rigid hairs which characterise that species, and also by its sori being seated in a cavity or depression, as in many species of *Phymatodes*.

697. Polypodium *Phlegmaria*, *J. Sm.*; frondibus linearibus pinnatis glabris, pinnis ovato-oblongis oblique undulatis subimbricatis sessilibus, basi superne truncatis gibbosis, inferne decurrentibus, rachi alata, soris 3-4 venulis termina-

ibus discretis. Near Roraima, British Guiana, *Schomburgk.* —Allied to *P. asplenifolium* and *P. cultratum,* but differs in being smooth and transparent, and in the pinnæ being oblique and undulate.

698. P. *discolor. Hook. Ic. Pl. t.* 386. Trunks of trees, Roraima. British Guiana, *Schomburgk, n.* 1031.

699. P. *taxifolium. Linn.—Willd. l. c. p.* 179. *Plum. fil. t.* 89. British Guiana, *Schomburgk, n.* 328. This is apt to be mistaken for *P. Plumula* of Humb.; but that species is distinguished by the veins being simple, whereas in the present they are forked.

700. Gymnogramma *calomelanos. Kaulf. En. fil. p.* 76. British Guiana, *Schomburgk, n.* 390.

701. Meniscium *dentatum. Presl.—M. palustre. Radd. Bras. fil. t.* 20. British Guiana. *Schomburgk, n.* 459.

702. Goniopteris *tetragona. Presl. Pterid. p.* 183. *Polypodium tetragonum. Sw.—Willd. l. c. p.* 233. *Schk. crypt. t.* 18. *b.* Forests along the Essequibo, British Guiana. *Schomburgk, n.* 135.

703. Lopholepis *ciliata. J. Sm. in Journ. of Bot. vol.* 4. *p.* 56. *Polypodium ciliatum. Willd. l. c. p.* 144. British Guiana, *Schomburgk, n.* 307.

704. Lepicystis *incana. J. Sm. l. c. p.* 56. *Polypodium incanum. Sw. Willd. l. c. p.* 174. Rio Branco, *Schomburgk, n.* 217.

705. L. *sepulta. J. Sm. l. c. p.* 56. *Polypodium sepultum. Kaulf. l. c. p.* 56. *P. rufulum. Presl. P. hirsutissimum. Radd. Bras. fil. t.* 26. *P. tricholepis. Mart. herb. Acrostichum lepidopteris. Lang. et Fisch. t.* 2. *Willd. l. c. p.* 113. Pedrero on the Rio Negro, *Schomburgk, n.* 904.

706. Goniophlebium *neriifolium. J. Sm. l. c. p.* 57. *Polypodium neriifolium. Schk. crypt. p.* 14. *t.* 15. *Willd. l. c. p.* 194. British Guiana, *Schomburgk, n.* 460.

707. G. *distans. J. Sm. Polypodium distans. Radd. Bras. fil. t.* 31. *P. polystichum. Link. En. herb. Berol.* 2. *p.* 101. British Guiana, *Schomburgk, n.* 504.

708. Phlebodium *aureum. R. Br. in Horsfield's plant.*

Jac. *Polypodium aureum.* *L.* *Willd. l. c. p.* 169. British Guiana, *Schomburgk*, n. 136.

709. Pleuropeltis *lycopodioides.* *J. Sm.* *Polypodium lycopodioides.* *Linn.* British Guiana, *Schomburgk*, n. 302.

710. P. *percussum.* *Hook. et Grev. Ic. fil. t.* 67. *Polypodium percussum.* *Cav.* *Willd. l. c. p.* 151. British Guiana, *Schomburgk*, n. 312.

711. Cyrtophlebium *costatum.* *J. Sm.* *Polypodium costatum.* *Kunze, in Linnaea.* British Guiana. *Schomburgk*, n. 324.—Although I have for the present adopted Kunze's name for this species, yet I am inclined to think that it is not different from *P. nitidum* of Kaulfuss.

712. Microgramma *persicariaefolia.* *Presl. pterid. p.* 214. Polypodium *persicariaefolium.* *Schrad.* *P. lycopodioides.* *Schk. crypt. t.* 8. *c.* (exclus. of *syn.*) British Guiana, *Schomburgk*, *n.* 301.

713. Phymatodes *Schomburgkiana.* *J. Sm.* *Polypodium Schomburgkianum.* *Kunze in Schk. crypt.* (*cont.*) British Guiana, *n.* 992.

714. Dipteris *crassifolia.* *J. Sm. l. c. p.* 61. *Polypodium crassifolium.* *Linn.* *Willd. l. c. p.* 161. British Guiana, *Schomburgk*, *n.* 343.

715. Pteropsis *angustifolia.* *Desv.* *Presl. pterid. p.* 225.

rostichum simplex, *Sw. Willd. sp. p.* 5. *p.* 100. *A. oxy-ylum*, *Künze in litt.* 1841. Woods of the Essequibo and upunoony, *Schomburgk*, *n.* 448.—*Kunze* appears to think is a new species, but it is certainly not distinct from amaica specimens of *A. simplex.*

720. E. *glabellum. J. Sm.* (n. sp.) frondibus lineari-lanceo-atis basi longe attenuatis glabris coriaceis stipite basi articu-ato, venis obscuris. British Guiana, *Schomburgk*, *n.* 447.—llied to *E. viscosum*, but differs in being smooth, and in the vident articulation of the stipes.

721. E. *latifolium. J. Sm. Acrostichum latifolium, Sw. Willd.* . *c. p.* 105. British Guiana, *Schomburgk*, *n.* 449 and 450.—possess specimens of this species from several localities, nd which vary much in the size of their fronds. Kunze con-iders n. 449 to be a distinct species, but on comparing it ith the difference of fronds consequent on local circumstances, hesitate to adopt his view.

722. E. *squamosus. J. Sm. Acrostichum squamosum* et *A. uscosum*, *Sw. Willd. l. c. p.* 104. British Guiana, *Schom-urgk*, *n.* 446.—I believe *Acrostichum squamosum* and *mus-osum* of *Sw.* and *A. lepidotum* and *A. tectum* of *Willd.* to be one and the same species.

Tribe PTERIDEÆ, *J. Sm.*

723. Cheilanthes *radiata. J. Sm. l. c. p.* 159. *Adiantum radiatum*, *Linn. Sw. Willd. sp. pl.* 5. *p.* 437. British Guiana, *Schomburgk.*

724 Adiantum *phyllitidis*, *J. Sm.* (n. sp.) frondibus pinnatis, pinnis elliptico-lanceolatis acuminatis basi superiore rotundatis inferiore cuneatis, sterilibus remote crenatis, petiolis decurrentibus, soris utrinque marginalibus continuis.—British Guiana, *Schomburgk*, *n.* 300.—This is a rather peculiar *Adiantum*, approaching in habit the simply pinnate forms of *A. villosum* ; but the circumstance of the petiole not being rticulated with the rachis gives to this species such a very istinct and marked character, that, without the presence

of sori, it would scarcely be considered an *Adiantum.* It so much the aspect of *Lindsæa macrophylla, Kaulf.* (n *Schizoloma*), that *Kunze* appears to have taken it for that, l the genus *Schizoloma* differs materially both in the structu of its sori and venation from *Adiantum.*

725. A. *villosum, Willd. l. c. p.* 444. British Guia *Schomburgk, n.* 379. French Guiana, *Herb. Par. n.* 273.

726. A. *obliquum, Willd. l. c. p.* 429. *Hook. et Grev. Ic.* *t.* 190. French Guiana, *Herb. Par. n.* 390.

727. A. *obtusum, Desv. Spreng. Syst.* 4. *p.* 113. *Hook.* *Grev. Ic. fil. t.* 188. French Guiana, *Herb. Par. n.* 388.

728. A. *triangulatum, Kaulf. En. fil. p.* 204. British Gu ana, *Schomburgk, n.* 48 and 90.

729. A. *politum, Humb.—Willd. l. c. p.* 442. British Guian *Schomburgk, n.* 349.

730. Doryopteris *palmata, J. Sm. in Journ. of Bot. vol.* I *p.* 162. *Pteris palmata, Willd. l. c. p.* 357. Sierra Carama Rio Branco, *Schomburgk, n.* 218.—This is very variable size, and in the more or less lobed character of its frond In some collections this species is found mixed along wi *Pteris pedata, Linn.*; but the latter has free venation, a I place it in *Cassebeeria*, whereas *Doryopteris* is characteris by the reticulated veins.

appears to me to be only a more linear and narrow form of the first.

735. A. *integerrimum*, *Spren. Syst.* 4. *p.* 81. *A. falx. Kunze in litt.* 1840. British Guiana, *Schomburgk*, *n.* 451, in some sets.

736. A. *salicifolium*, *Linn. Willd. l. c. p.* 313. *Plum. fil. t.* 60. British Guiana, *Schomburgk*, *n.* 451, in some sets.

737. A. *cuneatum*, *Lam. Willd. l. c. p.* 344. British Guiana, *Schomburgk. n.* 340.

Tribe Aspidieæ. *J. Sm.*

738. Cyclodium *confertum*, *Presl. pterid. p.* 85. *Aspidium confertum*, *Kaulf. En. fil. p.* 232. *Hook. et Grev. Ic. fil. t.* 121. British Guiana, *Schomburgk*, *n* 316 and 459, in part.—Not having seen perfect specimens of this fine fern till now, I had hesitated adopting *Cyclodium* as a genus in my original paper in the previous volume of this Journal. The examination of the present specimens has now induced me to adopt it. This genus is distinguished from *Nephrodium* principally by the indusium being orbicular, and the fertile fronds contracted, therefore my *Nephrodium acrostichoides* (Cuming, n. 194) is a species of *Cyclodium*.

739. Polystichum *abbreviatum*, *J. Sm. Aspidium abbreviatum*, *Schrad.* (according to Kunze in litt. 1841.) British Guiana, *Schomburgk*, *n.* 135.

740. P. *denticulatum J. Sm. Aspidium denticulatum. Sw. Willd. l. c. p.* 272. Roraima, British Guiana, *Schomburgk.*

741. Nephrolepis *ensifolia. Presl. Aspidium ensifolium. Sw. Willd. l. c. p.* 230. *Schk. crypt. t.* 32. *A. rufescens. Schrad. Splitgerber in Tijdscrift.* 7. *p.* 415. British Guiana, *Schomburgk*, *n.* 444.

742. N. *exaltata. Schott, Gen. fil. t.* 3. *Aspidium exaltatum. Sw. Willd. l. c. p.* 229. British Guiana, *Schomburgk*, *n.* 303.

743. Oleandra *pilosa. Hook. Gen. fil. t.* 458. *Aspidium*

pendulum. *Splitg. l. c. p.* 412. British Guiana, *Scho* n. 416.

Tribe DICKSONIEÆ. *J. Sm.*

744. Lindsæa *reniformis. Dry. Willd. l. c. p.* 420. Guiana, *Schomburgk*, n. 533.

745. L. *stricta. Dry. Willd. l. c. p.* 425. *Schk.* *t.* 114. *L. pusilla, Splitg. l. c.* British Guiana, *burgk.*

746. L. *trapeziformis. Dry. Willd. l. c. p.* 424. *dissima. Rich. Willd. l. c. p.* 423. British Guiana, *burgk*, n. 347.

747. *L. rufescens. Kunze in litt.* 1840. British *Schomburgk*, n. 346.—I doubt this being distinct *Guianensis*, the only character being in the dark colou stipes and rachis, which may be occasioned by a gr less degree of exposure to light and air.

748. Hymenostachys *diversifrons, Bory. Trichom* *gans* (in part). *Rudge, Plant. Guian. t.* 35. *Willd. l. c.* Serra Mey, British Guiana, *Schomburgk*, n. 1030.—T and beautiful fern is distinguished as a genus, distin *Trichomanes*, by the circumstance of its venatio

751. T. *floribundum, Humb.—Willd. l. c. p.* 505. British Guiana, *Schomburgk, n.* 299.

752. T. *Kraussii. Hook. et Grev. Ic. fil. t.* 149. British Guiana, *Schomburgk, n.* 440.

753. T. *coriaceum, Kunze Analect. t.* 29. *f.* 1. British Guiana, *Schomburgk.*

754. T. *Ankersii, Hook. et Grev. ic. fil. t.* 201. Rio Padawire, British Guiana, *Schomburgk.*

755. T. *tenerum? Spreng. Syst.* 4. *p.* 129. Sierra Paraima, British Guiana, *Schomburgk.*—It is with some doubts that I refer this to the *T. tenerum* of *Sprengel,* it is rather more finely divided than in specimens which I consider to be that species. It is also closely allied to *T. angustatum* of *Hook. et Grev.*

756. Hymenophyllum *polyanthos, Sw. Willd. l. c. p.* 530. *Hook. et Grev. ic. fil. t.* 128. British Guiana, *Schomburgk, n.* 509.—This appears to be a very generally diffused species, I have received it from several of the West-Indian islands, Brazil and the Philippines.

757. Sitolobium *adiantoides, J. Sm. in Journ. of Bot. vol.* 5. *Dicksonia adiantoides, Humb.—Willd. l. c. p.* 488. French Guiana, *Herb. Mus. Paris, n.* 289.

Tribe CYATHEÆ. *J. Sm.*

758. Alsophila *armata, Mart. Polypodium armatum, Radd. Bras. fil. t.* 42. *Spreng. Syst.* 4. *p.* 61. French Guiana, *Herb. Mus. Paris, n.* 275.

759. Alsophilæ *sp.* French Guiana, *Herb. Mus. Paris, n.* 276.

760. Alsophilæ *sp.* British Guiana, *Schomburgk, n.* 304.

761. Amphidesmium *rostratum, J. Sm. l. c. Polypodium rostratum, Humb. Willd. l. c. p.* 193. *P. Parkeri, Hook. et Grev. ic. fil. t.* 232. *Metaxya rostrata, Prel. Pterid. p.* 59. British Guiana, *Schomburgk, n.* 18.

GLEICHENIACEÆ. *R. Br.*

762. Mertensia *glaucescens. Humb.— Willd. l. c. p.* 72. British Guiana, *Schomburgk, n.* 378.

763. M. *immersa. Kaulf. En. fil. p.* 38. *Hook. et fil. t.* 15. British Guiana, *Schomburgk.*

764. M. *pedalis, Kaulf. En. fil. p.* 39. Open Sa British Guiana, *Schomburgk, n.* 1039.

Tribe SCHIZÆACEÆ. *Mart.*

765. Anemia *villosa, Humb. Willd. l. c. p.* 92. *A.* *Sw. Willd. l. c. p.* 93. *Radd. Bras. fil. t.* 13. Britisb *Schomburgk.*

766. Lygodium *venustum, Sw. Hydroglossum ha* *H. hirsutum Willd. l. c. p.* 79, 80. British Guiana *burgk, n.* 74.

767. L. *volubile, Sw. Hydroglossum volubile, Will* 78. British Guiana, *Schomburgk, n.* 399. French *Herb. Par. n.* 272.—There can be no doubt but that the forms described as species of this genus are o tions of a few species.

768. Schizæa *Flabellum, Mart. fil. crypt.* 115. *t.* phidium latifolium Rich.* British Guiana, *Schoml* 443.—Probably this is only an entire form of the fo

769. S. *elegans, Sw. Willd. l. c. p.* 88. British *Schomburgk.*

770. S. *incurvata, Schk. crypt. p.* 138. *t.* 137.

l. c. p. 67. *Spreng. Syst.* 4. *p.* 24. British Guiana, *Schomburgk.*—The examination of the present specimen, as also the specimen in *Mr. Rudge's* herbarium, has convinced me that this simple form of *Danæa* is a true species, and not a simple state of the usual pinnate form of the genus.

LYCOPODIACEÆ. *De Candolle.*

773. Lycopodium *aristatum*, *Humb. Willd. l. c. p.* 17. Serra Mĕy, British Guiana, *Schomburgk.*

774. L. *cernuum*, *Linn. Willd. l. c. p.* 30. British Guiana, *Schomburgk*, *n.* 395.

775. L. *linifolium*, *Linn. Willd. l. c. p.* 47. Rio Padamo, British Guiana, *Schomburgk*, *n.* 1017.

776. L. *concinnum*, *Sw. Willd. l. c. p.* 40. British Guiana, *Schomburgk*, *n.* 982.

777. L. *geniculatum*, *Presl.—Haenk. p.* 80. *Spreng. Syst.* 4. *p.* 19. British Guiana, *Schomburgk*, *n.* 118.—This and the preceding species appear to be common within the tropics of both the eastern and western hemisphere.

778. Lycopodii *sp.* (probably new,) allied to *L. Jussiæi*, *Desv.* Sandy Savannahs, Rio Padawire, British Guiana, *Schomburgk*, *n.* 979.

BOTANICAL INFORMATION.

FRANCE.

IT will be seen by the following extract of a letter from a friend in Paris, that the French Botanists are not inactive, though they have experienced a great loss in the recent death of M. Guillemin, who died at Montpellier, whither he went for a complaint in the heart, the strong means taken to remove this disorder having produced congestion of the brain, which caused his decease a week after arriving at Montpellier.

"I think I may truly say, that, thanks to the fostering care of government, Paris maintains her rank as the chief centre of knowledge, not less in Botany than in other sciences. In the autumn of last year appeared Gaudichaud's *Organogénie*, and the elaborate treatise of Decaisne on the *Hydrophytes*, containing many new views as to their organization. Dr. Montagne finished his two long and exceedingly important works on the cellular plants of Cuba and of the Canaries. M. de Jussieu presented to the world the *Synopsis* of his forthcoming *Monograph of the Malpighiaceæ*, and M. Spach published a new volume of his "*Plantes Phanérogames*," in the *Suites à Buffon.*

"The harvest of this year promises to be still more abundant. M. de St. Hilaire lately returned from his journey through Norway, from Christiania to Drontheim, and is now preparing his Brazilian plants for publication, in the shape of a reduced *Flora* or *Synopsis.* M. de Jussieu is printing his splendid *Monograph of the Malpighiaceæ.* Count Jaubert, lately a minister of state, in conjunction with M. Spach, is at work on a quarto volume, with figures of the plants of *Asia Minor*, collected by himself in his journey through that country, to be entitled *Illustrationes Plantarum Orientalium.* M. Gay has passed from the *Anthemideæ* to the intricate genus *Erysimum*, of which he has just given to the world *Erysimorum quorumdam Diagnoses*;* a small pamphlet, containing 27 new or revised species of the genus, and an exceedingly detailed account of *Erysimum murale* (Desfont.), the forerunner, as he promises, of a *Monograph* of the whole group. M. Gaudichaud is publishing the plants of his last voyage round the world in the Bonite; several plates, beautifully illustrated, have already appeared. The indefatigable Dr. Montagne has commenced the description of the cellular plants of the expedition of Admiral d'Urville. The first volume, containing a part of the narrative of this important voyage, has already appeared. M. Hombron, one of the medical men of the Astrolabe, undertakes the phanerogamous plants. M. Decaisne continues his publication of the remarkable species of Jacquemont's journey, and is engaged in a very important treatise on certain lower orders of plants hitherto usurped by zoologists, and incorrectly ranked among animals. Dr. Leveillé is preparing an interesting work on *Fungi*. M. Boissier's magnificent book on Spanish plants, published at Paris, is finished, and he is now editing, in the *Annales des Sciences Naturelles*, a review of the northern Asiatic *Ranunculaceæ* and *Cruciferæ*, in order to publish the new species contained in the Herbarium of Aucher, preparatory to a voyage which he himself proposes to make to Smyrna. Three young botanists, MM. Ernest Germain, Ernest Cosson, and Algernon Weddell, are preparing a *Flora Parisiensis*, with graphic details of generic and specific distinctions, from the pencil of the former, but without portraits of the species. This work, however, will not probably appear this year.

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* As sixty copies only of this important pamphlet are printed, and those only destined for private distribution, we are sure that we shall render a service to Botany by giving the same in our Journal, which we have the author's permission to do.—Ed.

"Professor Parlatore, of Palermo, remains at Paris, by permission of his government, to take advantage of the libraries and collections, and of the superior instruction afforded by the professors of the Sorbonne and the Museum of Natural History. He has, in the press, a reprint of divers Memoirs, scattered through different Italian journals, with several additions, and likewise a monograph of the genus *Fumaria*, for which he has long been collecting materials. The whole is in Latin, excepting a very interesting preface, treating of the geographical distribution of this little group, which is in Italian. Col. Bory de St. Vincent, on his arrival at Paris in April, will no doubt prosecute the publication of his *African Flora* with his accustomed spirit and activity. Baron B. Delessert, notwithstanding the magnificent work on Conchology which he is publishing, is about to edit another volume of *Icones Selectæ Plantarum*."

RUSSIA.

Copy of a Letter from DR. VON FISCHER, *Superintendent of the Imperial Garden at St. Petersburg.*

"I shall begin this botanical letter with mentioning Turtchaninoff (the well known naturalist and traveller in the north of Russia and Siberia). It is to be feared he has not much time now for his and our favourite pursuit, as he is appointed, temporarily however, to the government of Jenissëisk, of which Kramoïarsk is the principal place. He has sent some trifling Memoirs to the *Moscow Society of Natural History*. Our traveller, Schrenk, has thoroughly explored, during last year, the Steppe of the Kirghis, depending on Russia, where he discovered a good many plants, forming a transition from the Flora of Siberia to that of the Himalaya Mountains, and on the publication of which, Dr. Meyer and myself are now jointly employed. I send you herewith a prospectus of the new species, and as soon as the description is published, you shall receive a copy. The two first sheets are already printed. There will be a short *Proœmium* to these descriptions, written, I am sorry to say, in the German language, because I am not sufficiently master of French, to render correctly the multitude of geological terms. A brief account of Schrenk's journey is to be published in Russian; its interesting nature will, however, soon ensure its translation. You will receive specimens of the greater part of his plants on his return from Siberia, as he wishes to preside in person over their distribution.

Dr. Koch, of Jena, has printed in the *Linnæa*, the beginning of a *conspectus* of those plants which he detected and gathered in Georgia and Armenia. I have not examined it attentively, and can form no judgment respecting his new species.

"M. Karéline visited nearly the same tract of country as M. Schrenk. I have seen none of the botanical results of this tour, though he must have found many plants. They be described by the Naturalists' Society of Moscow, iefly by Prof. Alexander Fischer Faldheim, (the same ublished the pancreatic microscope), and Dr. Alex- Richter; and I suppose we may look for them imme- .

even is rather too much occupied in the affairs of ad- ation, which press heavily on his shoulders, to do any- n botany. M. Hartwiss, Director of the Imperial at Nikitz (Crimea), has received many interesting from Abcharia, sent by Count M. Worontzoff. them he has found a yellow-flowered *Pæonia*, *lium pinnatum* (confined hitherto to Talysk alone), *Nordmanniana* (an *Abies*), said to be a showy and ul tree; of these plants I hope to communicate a to you, when I shall receive my share from M. ss.

. Hohenoche has quitted Russia, to my great regret, now how many good plants we owe to him), and has d to Zurich, his native country; intending to make wn the starting point for any place where he can hope materials worth collecting. I am very sorry to say s health is none of the strongest, and he could never e trial of a tropical climate.

r. Meyer is about terminating the publication of Altai described by Dr. Bongard, from a collection destined a supplement to the *Flora Altaica;* this is printed for *ademy of Sciences*. There will be likewise an interesting ical *Monograph of Cacti*, by Schlieden, in the next of the *Mémoires de l'Académie*. I am not aware if the are already engraved, but I hear they are numerous.

lately received the section of a trunk of *Taxodium sem- ns*, which will afford a good criterion for determining and longevity of those gigantic trees. The largest, measured, had a diameter of 11 feet 9 inches, at about above the ground: 20 feet higher up, it still measured 6 inches. The tallest of these trees was 238 feet high. gment I possess is from a tree 7 feet in diameter, and its concentric rings are exceedingly close together; as soon as I have counted their number I will tell you what it is."

Mr. Karéline's Journeys in Siberia.

Siberia and its principal mountains, the Altaic and Sayanian Ranges, are now in course of investigation by M. Karéline, a traveller, sent out at the expense of the *Imperial Society of Naturalists*, at *Moscow*. He has visited Barnaoul; and when he last wrote, his head-quarters were fixed at Semipalatinsk; this latter place possessing many advantages over Barnaoul, in being situated south of the slopes of the Altaic Mountains, and in a country, little known and explored by Naturalists; whereas Barnaoul, several degrees more to the north, is already thoroughly investigated through the exertions of many successive travellers. Such is the number of spots which remain to be visited, and so varied and extensive the curious objects, whether in *Geology*, *Mineralogy* or *Botany*, which they contain—that M. Karéline declares that a period of three years would be too short to do justice to the country beyond the Irtysch River.

M. Karéline writes thus, "Having sent my young companion and assistant, Kiriloff, to explore the nothern slope of the Tarbagatay Mountains, lying on the frontiers of China, and to gather seeds there, I fixed myself at Semipalatinsk. The season is not peculiarly favourable to Botany, though, as a compensation, the *Birds* and *Animals* are, just now, in their highest beauty. *Compositæ* and *Chenopodiaceæ* engross the vegetation. The climate of this place, though situated in a very remote part of Siberia, is quite temperate; and many plants ripen their seeds, as *Erigeron ciliatum*, *Cirsium acaule*, *Saussurea salsa and S. glomerata*, with several *Artemisiæ*. Of the latter genus we gathered twenty-two species. ——M. Kiriloff has returned, bringing home but a few, though extremely rare, plants; and we are now occupied in arranging the different things we have collected and with hich we hope to fill forty cases." In subsequent letters, ur zealous collector speaks of spending the winter in examining and describing what he and his assistants have found, completing his journal and obtaining such information as shall guide his future movements. He earnestly desires that the *Society* should draw up and publish, at his own expense, a map of the places which he has visited, and for which he has sent some materials, and which are very little known; as the mountain-chains of Tarbagatay, and Mongrok, the stream and course of the waters of the Black Irtysch, and the road which leads from Russia to the farthest provinces of China. He entreats the Society to make arrangements for the conveyance of his collections; a matter of great difficulty, as the Post carries nothing, exceeding a pood in weight, and there is little facility of communication from Kazan to Moscow; and he finally begs to have a *Daguerrotype* sent out, the price of which he proposes should be paid out of his allowances. The Society hastened to grant the two latter requests; but deferred, till it should be more closely examined, the preparation of the map of M. Karéline's course.

Zoology occupies much of our Naturalist's attention. The *Sheep of the rocks (Ovis Ammon)* and a new species of *Cat*, distinguished by its beautiful annulated tail, had respectively given much trouble, and foiled, for a long time, all his plans or capturing them. The sheep is gifted with a peculiarly elicate sense of hearing, and whole flocks take to flight on he least noise. Still, M. Karéline has killed several, one specially large male, weighing nearly eight poods. As to he *cat*, the subtle animal baffled all his snares. *The Alpine Wolf (Lupus alpinus)* and *the wild Horse* of the Kirghis Steppes *(Equus Hermionus* of Pallas), are great objects of desire to M. Karéline; though deep snows, violent hurricanes and avalanches, defeated the hope of much being done abroad in Zoology during a Siberian winter. "In January, 1841, the snow was so deep at Semipalatinsk that it rose above the roofs of the houses, and had to be cut away on either side of the street, the ridge in the centre offering a deep descent on each side to the doors of the dwellings. The thermometer indicated 40 degrees of cold; and this weather lasted till the middle of February, interrupting all communication, and causing many disastrous casualties; the snow being so loose that sledges cannot go, and the Post has to be carried on the backs of horses."

"It is much to be lamented that the indolence of the natives of this country, prevents their taking advantage of such circumstances as would mitigate the ills caused by the severity of the weather. For instance, though there is a large forest, but four wersts off the city, wood is extravagantly dear; and the same may be said of *fish*, though the Irtysch produces great quantities of *salmon*, *trout*, and *sturgeon*. The soil is fertile, and a return of tenfold on *wheat* sown, may be expected even in the very worst seasons. Still the necessaries of life are scarce and costly; nobody goes shooting or hunting the game which abounds; fishing is quite neglected, and the fertile soil often lies waste; and all through the laziness of the people."

M. Karéline keeps a full and accurate Journal, in which he enters an immense number of interesting facts, relative to the *Geography*, *Statistics*, *Finances*, *Physical history*, and *Meteorology* of the countries he has visited, as well as a catalogue of his collections in every department. He has gathered upwards of 38,000 botanical specimens and 1120 species, and has sent home, in all, sixty-four cases filled with the produce of his labours; *skins of beasts and birds*, *insects*, *minerals*, *metals*, *and plants*.

The past summer was to be spent by M. Karéline on the Sayanian Mountains, beyond the Irtysch, and in exploring the provinces of Zongaria and the Semiretchinski (or Seven Rivers) Kirghis, lately annexed to the Russian dominions. This winter he meant to fix himself in the government of Irkutsck; and by March to reach the shores of the Lake Balkhach, so rich in *Ornithology* and small *Mammiferous animals*. To these plans the Society gave its hearty consent, and procured such letters to the different governors and au

of these remote districts as seemed needful to the
s success.

een *new species of plants* are enumerated and des-
M. Karéline's catalogue; *Gentiana riparia, Convol-*
ans, and C. dianthoides, Echinospermum secundum, E.
E. stylosum, Rochelia incana, Statice ochrantha and
ma, Verbascum Candelabrum and V. velutinum, Scro-
pinnata, Chondrilla Rouillieri, and C. leiosperma,
lensiflora, and Anabasis phyllophora. Twenty-three
velties, making forty in all, are only mentioned, not
among them *Stroganovia sagittata and S. brachyota,*
enus, named in honour of the *President* of the
Naturalists' Society.

of the hardships which a Traveller must encounter
ia may be imagined, when we mention that at
y the snows were so dreadful that M. Karéline
ged to relinquish his plan of wintering there. Horses
able to pass on the roads, and men with snow-skaits
uld make their way along the regular Post-track.
le perished for want of food, for hay could not be pro-
ll the stacks being so covered with snow that the
ces of them had disappeared. Some of the roofs
rtopped by the snow in the streets, and it was only
g steps down the sides of the frozen mass that the
could be approached. Were it not customary in
to roof over all the court-yards and large enclosures,
es or domestic animals could survive a single winter.
l weather, however, proved of some advantage to M.
, in enabling him to capture several rare *birds*, which
t of food in the fields and among the bushes, had
take refuge among the haunts of men.

E FLOWERS OF THE ANTEDILUVIAN WORLD.

following lively notice of the recent researches of
eppert is extracted from the "Constitutionnel," a
literary journal.)

"Fossil wood, fossil leaves, fossil bones, and fossil *infusoria;* all these things we have long heard about; but M Goeppert,* who being a botanist, naturally seeks for flowers has had the rare good fortune to detect the blossoms of the world before the Flood! This is true to the very letter; he has gathered him a bouquet of these more than patriarchal flowers, he has seen their buds, their corollas, their propagation, nay, he has gone near to perceive their perfumes! And much more than all this, M. Goeppert has set himself to detect the mode in which nature has so wrought as to turn these most delicate of all substances into stone: thus perpetuating that which a breath of wind is sufficient to destroy, and moulding into a geological specimen what a finger's touch will fade! So patient, so sagacious is he, that he has caught the secret of this mechanism, and thus enables us to discern the transformation of the temporal to the eternal, and the metamorphosis of what is fragile into what is durable. And as if M. Goeppert were afraid that people should say to him what Rousseau declared to the chemists: 'I will only credit the decomposition of the farina when a chemist shall perform it before me,' so has he proceeded from analysis to synthesis; he has actually *made fossil plants!* This were the man who might be expected to enter a drawing-room, wearing a fossil rose, like a badge, in his button-hole: and if ever such an *Order of savans* be instituted, M. Goeppert is the person to be made its president.

"We may easily suppose that all these things can never have been effected without hourly labour and repeated toil; much mental harass, and many fruitless efforts. Our Breslau Professor has realized the German proverb: 'Leaden body and head of fire will do wonders.' He has almost nailed himself to his chair, and heaping rocks and stones all round him has given free scope to his imagination. The Antiquary ' the vegetable creation, he has filled both hands with i

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* This gentleman, a Professor in the University of Breslau, is about publish a work at Prague, entitled: "*Les genres des Plantes fossiles, co parés avec ceux du Monde moderne, expliqués par des figures.*

and then has put together the forests, fields and oases
t centuries. Give Cuvier a bone, and he will set the
animal before you;—and thus Goeppert, with a leaf, re-
ucts the tree, and with a grain of pollen, revivifies the
! Such a flower, too, as the human eye could never
discerned without the aid of science—science, which
all the ravages of time.

Let us cast a glance on the apartment where our Breslau
ssor passes many hours in meditation. There are 236
ents of transition rocks, such as we tread upon in the
nnes and on the banks of the Meuse; 1548 pieces of
similar to what you would burn any day and perceive
ng remarkable in it; 35 blocks of variegated freestone,
same kind as served to build the Cathedral of Stras-
g, and those churches in Mayence where M. Victor
could see nothing but plaster of Paris monuments; 122
mens of lias from the coasts of Britain, in which English
have detected real antediluvian monsters; 242 heaps
een sandstone and of chalk; 742 portions of lignite and
rf; and 259 of those small flat slabs, which on the banks
e Rhine are employed for the purpose, when put into
ogsheads, of giving fresh spirit to wine which is a cen-
old. Such is M. Goeppert's Museum.

M. Brongniart, of the Institute, has paid much attention
ssil vegetation; his plan consists in comparing antedi-
n productions with those of the present world, and the
ts of former days with what now exist. M. Goeppert's
e is quite different; for he proves, beyond all contradiction,
it is impossible to discern the distinction between two of
common and very similar trees, as the *common Pine* and the
mouth, by the mere examination of their internal structure.
philosophy, therefore, consists in clearly separating the
l from the living creation, and giving to the former a
inct nomenclature and object,—more with reference to
ogy than botany. He divides *fossil plants into three*
ses;—those in which the stems, leaves, flowers, or fruits
e stony or earthy layers interposed between them, and

are flexible, slightly browned, and in a state of perfect carbonization : those again, where the impressions of the bark are internally filled with stony matter: and, finally, such as present a complete fossilization, and have the entire mass, and all their several organs, cells and vessels, replete with petrifying substance, though they are not *changed into stone*, as such specimens are commonly, though erroneously, called.

" In the coal of Silesia and of other countries, M. Goeppert has discovered and obtained several plants, still flexible, and which admitted of his dissecting their epidermis and organs of evaporation, and he has thus been enabled to ascertain how subterranean combustion has destroyed the tissue in other plants found in the same formation. He detected, in the Keuper formation, the branches of a tree analogous to the *Birch*, on which the flowers and *pollen* were still perfectly preserved ; and some fir-trees presented him with a similar phenomenon.

" It is well known, that in the north of Europe, there occasionally falls from the skies, an enormous quantity of a yellow powder, which was once supposed to be sulphur, but which savans have pronounced to be the *pollen* of the *Fir-blossom*. Now, in Westerwald, Finland, Bohemia, and even in New York, this floral substance has been discovered in such great quantities deposited between layers of earth, and mingled with *fossil Infusoria*, that M. Goeppert is enabled to pronounce that the antediluvian world must have also possessed its enormous forests of gigantic pines, whose yellow dust could not but obscure in its fall the light of day, since the masses of it are so thick and close-pressed, as even to raise the soil many feet.

" We have already said that M. Goeppert MAKES fossil plants, and to prove how fossilization has actually taken place, this ingenious man so works with clay, fire and water, on a given plant (and chiefly with the ferns, those vegetables of which the geological productions of our globe present the most perfect specimens), that he produces, in the course of one year, by this moist process, such samples, and so admitated, that even a connoisseur, if not forewarned of ption, might mistake them for genuine fossils. An- we know, will sometimes manufacture fictitious at Baiæ, the poorest blacksmith sells his yesterday's ons for Roman antiquities; art may imitate art; tion must have reached its utmost perfection when nulate antediluvian nature.

he cabinets of the curious, we often see flies and ects enclosed in amber. M. Goeppert has examined er of various lands, and has detected not only but mosses, fungi, hepaticæ, ferns, flowers and fruit d in it; and on these flowers the minutest organ is d as in a mummy balm; nay, he has actually dis- hose microscopic hairs which adorn the velvetty sub- flowers similar to those of our *Heartsease*."

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tract of a letter relating to Swan River Botany.

ames Drummond, in a letter recently received from ver, dated July 2, 1841, says:

going on collecting specimens to send home by that ch carries our wool, and which is to sail from this out Christmas. I have entered into an agreement essrs. Low, the nurserymen at Clapton, to supply h the seeds and bulbs of our Swan River plants, to annual amount; and as the period of gathering pecially in this country, is exceedingly brief, I shall ch to do in fulfilling their orders, together with col- pecimens.

observe, in your letter of July, last year, that the this land must be worth picking up. They do exist, n great variety, and some are highly curious. We ecies belonging to most of the European genera; ly, I believe, identical with what grow in England; are also several genera which I think are unknown One genus, of which I have seen two species, never above the surface of the earth, unless accidentally thrown up. The first specimen that I found of it was grow in siliceous sand, its form exactly globular, about an in and a half in diameter, and covered, when dry, with a ha crust, resembling dark-coloured sand-paper. The fung itself, dries up, and occupies a very small space withinsi these globes; they are sometimes sent home as curiositi from this country; though few people know their real natur Once, only, I gathered a smaller pear-shaped species, ev dently of the same genus, and found on clay ground. W have a *Fungus* with the habit of *Lycoperdon*, but which burst and discloses five or six red-coloured wrinkled bodies, re sembling lobsters' claws, set in a circle, and their point turned inwards; they give out a sort of grey powder, pro bably the seed. Another genus grows up like *Lycoperdon* and when it bursts, it exhibits a regular network compose of hexagonal meshes about half an inch across; these meshe are smeared with a fetid jelly, which is also seen lying i some quantity between the valves.

"As respects *Fungi*, however, I would chiefly like to giv you some account of two species of *Agaricus*, belonging t that division which has the stem at one side of the pileu They grow parasitically on the stumps of trees, and posses nothing remarkable in their appearance by day, but by nigl they emit a most curious light, such as I never saw describe in any book. The first species in which I observed thi property, was about two inches across, and was growing i clusters on the stump of a *Banksia* tree, near the jetty, Perth, Western Australia. The stump was at the time sur rounded with water when I happened to be passing on dark night, and was much surprised to see what appeared be a light in such a spot; on examination, I found it to pr ceed from this *Fungus*. It is six or seven years since th circumstance occurred. The late Dr. Collie, then our Col nial Surgeon, possessed a good collection of botanical book which he and I jointly consulted, but without finding an thing which bore on the subject. When this fungus was lai on a newspaper, it emitted by night a phosphorescent ligh enabling us to read the words round it; and it continued to do so for several nights with gradually decreasing intensity as the plant dried up.

"A few weeks ago, and not till then, I discovered another instance of the same kind. I was collecting plants on an ironstone hill, in the Toodjay district, when I was struck with the beauty of a large fungus, of the same character as the former, but measuring sixteen inches across, and about a foot from the root to the extremity of the pileus. The specimen which I carried home weighed about five pounds, was very smooth, yellowish-brown above, and dirty-white upon the gills: it gradually became thinner towards the outer edge of the *pileus*, where it was waved and sinuated. It was the beauty of the species which induced me to gather it, for as to making a full collection of the Swan River *Fungi*, such a task would require an entire season, and the skill of a person who could make drawings or models of them. The specimen in question was hung up inside the chimney of our sitting-room to dry, and on passing through the apartment in the dark, I observed the *Fungus* giving out a most remarkable light, similar to what I described above. No light is so white as this, at least none that I have ever seen. The luminous property continued, though gradually diminishing, for four or five nights, when it ceased, on the plant becoming dry. We called some of the natives, and showed them this fungus when emitting light, the room was dark, for the fire was very low and the candles extinguished, and the poor creatures cried out 'Chinga!' their name for a spirit, and seemed much afraid of it; and I certainly must own it is a very extraordinary *Will-o'the-Wisp*."

Notes on a BOTANICAL EXCURSION *to the Mountains of North Carolina, &c.; with some remarks on the Botany of the higher Alleghany Mountains.*

(In a letter to SIR W. J. HOOKER, *by* ASA GRAY, M.D.)

(Continued from p. 14 *of the present volume.)*

As the Ashe County had not been visited by Mr. Curtis, nor, so far as we are aware, by any other collector, and b from its situation the most accessible to a traveller from north, we determined to devote to its examination the p cipal part of the time allotted to our own excursion.

Intending to reach this remote region by way of the *Valle Virginia*, we left New York on the evening of the 23rd of Ju and travelling by railroad, arrived at Winchester, a dista of 300 miles, before sunset of the following day. At Harp Ferry, where the Potomac, joined by the Shenandoah, for its way through the Blue Ridge, in the midst of some of t most picturesque scenery in the United States, we mer stopped to dine, and were therefore disappointed in our ho of collecting *Sedum telephioides*, *S. pulchellum*, *Paronyc dichotoma*, and *Draba ramosissima;* all of which grow h upon the rocks. We observed the first in passing, but was not yet in flower. On the rocky banks of the Potom below Harper's Ferry, we saw, for the first time, the comm *Locust-tree (Robinia pseudacacia)* decidedly indigenous. probably extends to the southern countries of Pennsylva and, from this point southward, is everywhere abundant; we did not meet with it east of the Blue Ridge. Fr Winchester, the shire-town of Frederick County, we p ceeded by stage-coach, directly up the *Valley of Virginia*, that portion of the State is called which lies between unbroken Blue Ridge, and the most easterly ranges of Alleghanies. From the Potomac to the sources of the S nandoah, it is, strictly speaking, a valley, from twenty thirty miles in width, with a strong, chiefly limestone soil great fertility. It is scarcely interrupted, indeed, up to wh the Roanoke rises; but a branch of the Alleghanies in venes between the latter and New River, as the upper of the Great Kenhawa is termed; from which point it lo its character in some degree, and is exclusively traver by the western waters. The same valley extends to north and east, through Maryland and Pennsylvania, even into the State of New York, preserving thoughout same geological character and fertile soil. Our first d ride was to Harrisonburg, in Rockingham county, a distance of sixty-nine miles from Winchester. From the moment we entered the valley, we observed such immense quantities of *Echium vulgare*, that we were no longer surprised at the doubt expressed by Pursh, whether it were really an introduced plant. This "vile foreign weed," as Dr. Darlington, agriculturally speaking, terms this showy plant, is occasionally seen along the road-sides of the northern States; but here, for the distance of more than a hundred miles, it has taken complete possession, even of many cultivated fields, especially where the limestone approaches the surface, presenting a broad expanse of brilliant blue. It is surprising that the farmers should allow a biennial like this so completely to overrun their land. Another plant, much more extensively introduced here than in the north, (where it scarcely deserves the name of a naturalized species,) is *Bupleurum rotundifolium*, which in the course of the day we met with abundantly. The *Marrubium vulgare* is equally prevalent; and *Euphorbia Lathyris* must also be added to the list of naturalized plants. The little *Verbena angustifolia* is also a common weed. We collected but a single indigenous plant of any interest, and one which we by no means expected to find, viz., *Carex stenolepis* of Torrey,* which here, as in the

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* It is the *C. Frankii* of Kunth (1837) and Kunze's Supplement to Schkuhr's *Caricography*, where it is well figured; it was distributed among Dr. Frank's plants, under the name of *C. atherodes*, and with the locality of *Baltimore in Pennsylvania!* I had always supposed it to be derived from some part of the Western States; but since it abounds in the *Valley of Virginia*, it may have been collected near Baltimore, Maryland. By the way, we hope the excellent collections, distributed from time to time by the *Unio Itineraria*, are in general more correctly ticketed, than poor Frank's small collection from the United States. Not to venture beyond the *Carices*, we may remark that the plant distributed under the name of *C. blanda* is *C. Careyana*, (*Dewey*); their *C. plantaginea* is *C. anceps*, and their *C. Vleckii* is a variety of the same; their *C. depauperata* var. *Americana* (*C. Hitchcockiana* of Dewey) is a large form of *C. oligocarpa*, (*Schk.*) (the true *C. oligocarpa* of Schkuhr, but not of other authors, being a small state of Prof. Dewey's *C. Hitchcockiana*); and the *C. Ohiotica* (*formosa, Dewey?*) *Hochst.* is *C. Shortii*. This last, we may add, is the *C.*

Western States, to which we had supposed it was confined, takes the place of the northern *C. retrorsa.* We searched for its constant companion, *C. Shortii*, and the next day, we found the two growing together. During the day's ride, we observed that the *bearded wheat* was almost exclusively cultivated, and were informed that it had been found less subject to the ravages of the "Fly," than the ordinary varieties; which may be owing to the recent introduction of the seed of the bearded variety, from districts, unmolested by this insect. The following day we travelled only sixteen miles on our route, but from Mount Sidney made an interesting excursion on foot to *Weyer's Cave*, one of the largest, and certainly the most remarkable grotto in the United States. It has been so often described as to render any account on our part superflous. Near the cave we noticed some trees of *Tilia heterophylla*, (Vent.) (T. alba, *Michx f. sylv?*) and collected a few specimens with unopened flower-buds. It appears to be the most abundant species along the mountains.

Our ride, next day, afforded nothing of interest. Near Staunton, we saw some patches of *Delphinium Consolida*, where it was pretty thoroughly naturalized in the time of Pursh. We did not observe *Spiræa lobata,* which Michaux first met with in this vicinity, and which Pursh, as well as later botanists, found in various parts of the valley. Passing the town of Lexington in the evening, we arrived at the Natural-Bridge towards morning, where we remained until Monday, and had an opportunity of botanizing for a short time before we left. On the rocks we found plenty of *Asplenium Ruta-muraria*, *Sedum ternatum*, and *Draba ramosissima* with ripe fruit; in the bottom of the ravine, directly under the stupendous natural arch, (the point which affords the most impressive view of this vast chasm,) we collected spe-

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formosa of Kunth's *Cyperographia,* which will account for the discrepancy between his description and that of Dewey's *C. formosa*. The *C. juncea* of Willdenow and of Kunth, is, I am confident, only *C. brachystachys*, and not of American origin.

cimens of *Heuchera villosa*, (*Michaux*,) in fine flower, on the 28th of June; although, in the higher mountains of North Carolina, where it also abounds, the blossoms did not appear until near the end of July. This species is excellently described by Michaux, to whose account it is only necessary to add, that the petals are very narrow, appearing like sterile filaments. Although a smaller plant than *H. Americana*, the leaves are larger, and vary considerably in the depth of the lobes. It is both the *H. villosa* and *H. caulescens* of Pursh, who probably derived the latter name from the strong elongated rhizoma, often projecting and appearing like a suffrutescent stem, by which the plant is attached to the rocks; since he does not describe the scape as leafy, nor is this at all the case in the original specimens. The *H. caulescens α.* of Torrey and Gray's Flora,* with the synonym, must also be united with *H. villosa*, which in that work is chiefly described from specimens collected by Dr. Short in Kentucky, where everything seems to grow with extraordinary luxuriance. With these, the plant we collected entirely accords; except that the leaves are mostly smaller, and more deeply lobed; but this character is not constant.† Soon after leaving Natural-Bridge, we observed indigenous trees of the *Honey-Locust, (Gleditschia triacanthos,)* also *Æsculus Pavia?* and, in crossing the valley of James River, we noticed the *Papaw* (*Uvaria triloba,*) and *Negundo.* The road side was almost everywhere occupied with *Verbesina Siegesbeckia,* not yet in flower; and in many places with *Melissa* (*Calamintha*) *Nepeta,* which Mr. Bentham has not noticed as an American plant, although Pursh states it to be a native of the country. It was, however, doubtless introduced from Europe, but is completely naturalized in the valley of Virginia, in Tennessee, and in North Carolina, east of the Blue Ridge.

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* The specimen from Mr. Curtis, the only one from the mountains of North Carolina which the authors had before them, and which they, correctly enough, considered as the *H. caulescens* of Pursh, is in too advanced a state, and had lost from age most of the shaggy rusty hairs which so copiously clothe the petioles and lower part of the scape, and the leaves being smaller and more sharply lobed, it was not recognized as the same species with the luxuriant Kentucky plant; but was partly confounded with a different and larger-flowered species, the *H caulescens β.* (*Torr. and Gray, l. c.*,) from Bancombe county. The latter (*H. Curtisii, Torr. and Gray*, ined.) has flowers quite as large as those of *H. Americana*, spathulate-lanceolate petals (apparently purple) which scarcely exceed the lobes of the calyx, and the filaments, which are less exserted than the styles, are pubescent under a lens. The aid of its discoverer, however, is needed to complete the character of this species, the radical leaves being imperfect in our solitary specimen, and the cauline pair which it presents may very probably not be of usual occurrence.

† Much to our disappointment, we did not meet with *Heuchera hispida*, although I have since learned, from an inspection of Barton's herbarium,

On Tuesday, the 29th of June, we crossed the New River, arrived at Wytheville, or Wythe Court-house towards evening; and at Marion, or Smythe court-house, on the middle fork of the Holston, early in the morning. The vegetation of this elevated region is almost entirely similar to that of the Northern States. The only herbaceous plants noticed by us, as we passed rapidly along, which we had not seen growing before, were *Galax aphylla,* and *Silene Virginica;* the showy deep red flowers of the latter, no less than the different habit, caused us to wonder how it ever could have been confounded with the Northern *S. Pennsylvanica.* The only forest-tree with which we were not previously familiar, was the large *Buck-eye,* (*Æsculus flava,*) which abounds in this region, attaining the height of sixty to ninety feet, and a diameter of two or three feet or more at the base.

At Marion, we determined to leave the valley road, and to cross the mountains into Ashe county, North Carolina; the morning was taken up in seeking a conveyance for this purpose. With considerable difficulty, we at length procured a *carry-all,* (a light covered waggon, with springs, drawn by

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that we passed within a moderate distance of the place where Pursh detected it. The habitat given on the original ticket, "*High mountains between Fincastle and the Sweet Springs, aud some other similar places,*" we here cite; with the hope that it may guide some botanist to its re-discovery. The habitat in Pursh's Flora, "High mountains of Virginia and Carolina," is probably a mere guess, so far as relates to the latter State.

horse), capable of carrying our luggage and a single per-
besides the driver, a simple shoemaker, who had never
ore undertaken so formidable a journey, and who, accord-
ly, proved entirely wanting in the skill and tact necessary
conducting so frail a vehicle over such difficult mountain-
cks, for *roads* they can scarcely be called. He had first
ascend the steep ridge, interposed between the Middle
d the South Forks of the Holston, called *Brushy Moun-*
n; during the ascent of which, we commenced botanizing
earnest. The first interesting plant we met with, was
xifraga erosa of Pursh, but only with ripe fruit, and even
th the seeds for the most part fallen from the capsules.
e same locality also furnished us with a few specimens of
pretty *Thalictrum filipes, Torr. et Grev.* (to which the
me of *T. clavatum,* D.C. must be restored), a plant which
ounds all along the cold and clear brooks throughout the
untains of North Carolina, where it could not well have
aped the notice of Michaux, in whose herbarium De
ndolle found the specimen (with no indication of its ha-
at), on which his *T. clavatum* was established. The au-
rs of the *Flora of North America,* having only an imper-
t fruiting specimen of their *T. filipes,* and not sufficiently
narking the discrepancies between the *T. clavatum* (*Hook.*
Bor. Am.), and the figure and description of De Can-
lle's plant, as regards the length of the styles, assumed
former to be the true *T. clavatum,* and described their
n plant as a new species. But our specimens accord so
rfectly with the figure of Delessert, (except in the
eater, but variable length of the stipes to the fruit, and in
e veining of the carpels, which, doubtless by an oversight
the artist, is omitted in the figure), as to leave no doubt
their identity. The sub-arctic plant may be appropriately
lled *T. Richardsoni,* in honour of its discoverer; and
me few particulars should be added to De Candolle's cha-
cter of our own plant.* The flowers of this species are

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* Thalictrum *clavatum,* (D.C.): glaberrimum, floribus hermaphroditis

[illegible] are figured by De Lessert, [illegible] described them. It is a [illegible] twelve, or rarely ex- [illegible] with pure white flowers. [illegible] *arifolium*, (Michx.), [illegible] subsequently found this [illegible] the mountains of North [illegible] surprised at its remaining so [illegible] On a moist rocky [illegible] some specimens of a [illegible] It proves to be [illegible] *S. serrata*, and [illegible] with the name of [illegible] of uncommon occur- [illegible] mountains. It is a slender [illegible] high, and the stems often [illegible] from their base. We [illegible] *Linn.*, in similar si- [illegible] the northern *A. Cana-* [illegible] species, while *A. arifolium*,

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[illegible] muticis, carpellis [illegible] compressis leviter

seems to be confined to the lower country.* The
the shady and cool rivulets which we crossed every
ites during our ascent, were in many places covered

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aisne's *Heterotropa* be retained as a distinct genus, which it probably
the character must be somewhat modified and two of our American
erred to it, although the name will be unmeaning as applied to these
cording to this view, the differential characters of the two genera
sented as follows :—

Asarum. *Tourn.*, *Linn.* (excl. spec.)

um campanulatum, tubo cum ovario connato, limbo tripartito. *Sta-*
lamenta subulata, libera, vel basi styli subadnata ; *antheræ* breves,
connectivo longe subulato superatæ. *Ovarium* perigonio adnatum:
umnam crassam apice breviter 6-lobam concreti, stigmatibus papil-
ntes. (Herbæ Europeæ et Boreali-Americanæ.)
uropæum (Linn.), filamentis liberis stylum æquantibus.
adense (Linn.), filamentis imis styli basi adnatis eoque brevioribus.
. Canadense, Thunbergii ?

Heterotropa. *(Morr. et Decaisne.)*

um ventricosum, trilobatum, fere liberum. *Stamina* 12 : *filamenta*
vel subnulla, dilatata, ovario accreta ; *antheræ* (loculi lineares) ex-
andoque alternæ subintrorsæ; connectivum muticum, vel appendice
um. *Ovarium* basi imo perigonii tubo adnatum: *Styli* 6, discreti, in
o bilobam ultra stigmata extrorsa plus minus producti. (Herbæ Ja-
Boreali-Americanæ. Folia sæpius variegata.)
igonium urceolatum, fauce constricta. Stamina 6, *stigmatibus oppo-*
ntis triangularibus, antheris subintrorsis ; 6 alterna sessilia, antheris ex-
eterotropa ; *Morr. et Decaisne in Ann. Sci. Nat.* (n. ser.) 2 ; *p.* 314,

roides (*Morr. et Decaisne*, l. c.) ; perigonii lobis late ovatis subcordatis
minibus 6 ad stigmata respondentibus appendiculo brevissimo reflexo,
appendiculo ovato erecto ovario affixo," stylis obcordatis. *Asarum*
, Thunb. Fl. Jap. p. 190.
igonium breviter trilobatum, fauce aperta. Stamina consimilia, fila-
issimis ; antheræ omnes extrorsæ. Homotropa.
ifolia ; perigonio tuboloso-urceolato, limbo brevissimo, antheris ap-
brevi crasso superatis, alternis eodemque stigmatibus adhærentibus,
ibus crassis cornibus ultra stigmata breviter aut vix productis, foliis
rdatis. Asarum arifolium, *Michx. ; Hook. Exot. Fl.* 1. *t.* 40.
rginica ; perigonio breviter ventricoso-campanulato, antheris muticis,
stigmata longe rostratis apice bifidis, foliis rotundato-cordatis gla-
rum Virginicum, Linn.
of dehiscence of the cells of the alternate anthers in *Heterotropa*
said to be nearly lateral, or slightly introrse, so that this character
ngly marked, and probably will not be deemed of sufficient conse-
separate generically our two species from the Japanese plant. On

by the prostrate or creeping *Hedyotis serpyllifolia, Torr. et Gr.* (*Houstonia serpyllifolia, Michx.*), which continues to flower sparingly throughout the summer. This pretty plant has quite the habit of *Arenaria Balearica;* and the root is certainly perennial. We found it very abundant in similar situations throughout this mountain region. Towards the summit of this ridge we first noticed the *Magnolia Fraseri, (M. auriculata Bartr.)*, which resembles the Umbrella-tree (*Magnolia Umbrella*), in the disposition of its leaves at the extremity of the branches. This, as well as *M. acuminata* (the only other species of *Magnolia* that we observed), is occasionally termed *Cucumber-tree*; but the people of the country almost uniformly called the former *Wahoo*, a name which, in the lower part of the Southern States, is applied to *Ulmus alata*, or often to all the Elms indifferently. The bitter and somewhat aromatic infusion of the green cones of both these *Magnolias* in whiskey or apple-brandy, is very extensively employed as a preventive against intermittent fevers; an use which, as the younger Michaux remarks, would doubtless be much less frequent, if, with the same medical properties, the aqueous infusion were substituted.

Nearly at the top of this mountain we overtook our awkward driver awaiting our arrival in perfect helplessness, having contrived to break his carriage upon a heap of stones, and to overthrow his horse into the boughs of a prostrate tree. So much delay was caused in extricating the poor animal, and in temporary repairs to the waggon, that we had barely time to descend the mountain on the opposite side, and to seek lodgings for the night in the secluded valley of the South Fork of the Holston. In moist shady places along the descent, and in similar situations throughout the mountains of North Carolina, we found plenty of the northern *Listera convallarioides* in a fine state, entirely similar to the plant from Vermont, Canada, Newfoundland, and the north-

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the other hand, if it should be thought inexpedient to divide a genus so well marked by habit as *Asarum*, any two sections of *Heterotropa* would form subgenera of the former.

t coast, and agreeing completely with the figure of Swartz,
Weber et Mohr, Beiträge zur Naturkunde, 1. 1805, p. 2,
), and the recent one of *Hooker's Flora Boreali-Americana.*
is difficult to conceive why Willdenow should cite the
hrys cordata of Michaux, under the *Epipactis conval-*
ioides of Swartz, while there is so little accordance in
ir characters; but this has not prevented Pursh from
nbining the specific phrase of the two authors into one,
ile he assigns a locality (New Jersey), where the *Listera*
vallarioides certainly does not grow. The Rev. Mr. Curtis,
elieve, first detected the plant on these mountains.

The next day (July 1st), we crossed the *Iron Mountains*
e great chain which divides the States of North Carolina
l Tennessee, and which here forms the north-western
undary of Grayson County, Virginia), by Fox-Creek Gap,
l traversing the numerous tributaries of the North Fork of
w River, which abundantly water this sequestered region,
slept a few miles beyond the boundary of North Carolina,
er a journey of nearly thirty miles. It must not be ima-
ed that we found hotels or taverns for our accommodation,
except at Ashe Court-House, we saw no place of public
ertainment, from the time we left the valley of Virginia,
til we finally crossed the Blue Ridge, and quitted the
untain region. Yet we suffered little inconvenience on
s account, as we were cordially received at the farm-houses
ng the road, and entertained, according to the means and
ility of the owners, who seldom hesitated either to make a
derate charge, or to accept a proper compensation for their
spitality, which we therefore did not scruple to solicit from
ne to time. On the Iron Mountains we met with nearly
l the species we had collected during the previous day, and
th a single additional plant of much interest, viz., the *Boy-*
nia aconitifolia (*Nutt.*). We found it in the greatest luxu-
nce and abundance on the southern side of the mountain,
ar the summit, along the rocky margins of a small brook,
hich for a short distance were completely covered with the
ant. It here attains the height of two feet or more; the

stems, rising from a thick rhizoma (and clothed below,
well as the petioles, with deciduous rusty hairs), are tern
nated by a panicle of small cymes, which at first are crowde
but at length are loose, with the flowers mostly unilater
The rather large pure white petals are deciduous after infl
rescence, not marcescent as in *Saxifraga* and *Heuchera*. W
did not again meet with this plant; but Mr. Curtis collected
several years ago near the head of Linville River, and M
Buckley obtained it on the mountains of Alabama. It al
extends further north than our own locality, for although n
described in his *Flora*, Pursh detected it on the Salt-Pon
Mountain in Virginia.* I have little doubt that the *Sax*
fraga Richardsonii would be more correctly transferred t
Boykinia, as well as the *S. ranunculifolia;* and since th
S. elata of Nuttall, in Torrey and Gray's Flora, is referre
to *Boykinia occidentalis* in the Supplement to that work, n
pentandrous *Saxifrage* remains, except the ambiguous *S. Su*
livantii, (*Torr. et Gr.*) But the authors of the Flora, havin
received fruiting specimens of this interesting plant, do n
hesitate to remove it from the genus to which it was prov
sionally appended, and to dedicate it to their esteemed co
respondent, the promising botanist who discovered it.† Wh
descending the mountain on the opposite side, we met wi
Clethra acuminata, a very distinct and almost arboresce

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* The specimen in Professor Barton's Herbarium (in fruit) is ticketed
Pursh, "*Heuchera villosa, Michx.?* Salt-Pond Mountain, under the naked kn
near a spring. This spring is the highest I have seen." I know not the ex
situation of this mountain, from which Pursh obtained many interesting spec
The *Boykinia aconitifolia*, I may remark, would be a very desirable plant in c
tivation, and might be expected to endure the winter of New York or Ph
delphia. It would certainly flourish in England.

† SULLIVANTIA. *Torrey and Gray, Fl. N. Amer. suppl. ined.* *Calyx* infe
imo ovario adnatus, limbo quinque-fido. *Petala* 5, spathulata, unguicul
integra, summo calycis tubo inserta, marcescentia. *Stamina* 5, laciniis calyc
breviora; *antheræ* biloculares. *Styli* 2, breves; stigmatibus simplicib
Capsula calyce inclusa, bilocularis, birostris, polysperma, rostris intus longi
dinaliter dehiscentibus. *Semina* adscendentia scobiformia, testa membranac
relaxata, utrinque ultra nucleum ovalem alatim producta. *Embryo* cylindri
albumine vix brevior.—Herba humilis, in rupibus calcareis Ohionis vige
radice fibrosa perenni; foliis plerisque radicalibus, rotundato-reniformib
inciso-dentatis sublobatisve, longe petiolatis; scapo gracili decumbente; florib

species, which is well characterized by Michaux. The flowers were not yet expanded, but towards the end of July we obtained from other localities, specimens in full bloom, while the racemes and capsules of the preceding year were still persistent. The conspicuous bracts, it may be remarked, are as caducous in the wild as they are said to be in the cultivated state, usually falling before the flower-buds have attained their full size. We also saw *Campanula divaricata*, *(Michx.)*, not yet in flower, and obtained fruiting specimens of the *Convallaria umbellulata*, *Michx.* (*Clintonia* Raf., not of *Dougl.*) While the character in Michaux is drawn from this species, the "planta Canadensis" there mentioned is the nearly allied *Dracæna borealis* of the *Hortus Kewensis.* The two species are mixed in Michaux's herbarium; and although the latter is almost exclusively a northern plant, we found them both growing together on the *Grandfather*, *Roan*, and other high mountains of North Carolina. Towards the base of the mountain we saw, for the first time, the *Pyrularia* of Michaux, (*Oil-nut*, *Buffalo-tree*, &c., Hamiltonia oleifera, *Muhl.*), a low shrub, which is not of unfrequent occurrence in rich shady soil. Its geographical range extends from the Cherokee country on the confines of Georgia (where the elder Michaux discovered it on his earliest visit to the mountains, and where Mr. Curtis has recently observed it), to the western ranges of the Alleghanies of Pennsylvania, in lat. 40°, where it was found by the younger Michaux.* It flowers early in the season, and the oleaginous fruit, in the specimens we collected, had attained the size of a musket-ball.

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parvis (corolla conspicua alba) cymuloso-paniculatis, post anthesin in apicem pedicellorum arcte deflexis.

S. Ohionis.—Saxifraga? Sullivantii, *Torrey et Gray, Fl. N. Amer.* 1, *p.* 575: Genus a *Saxifraga* præcipue diversum staminibus petalis isomeris, et seminibus scobiformibus; a *Boykinia* calyce fere libero, atque seminibus; ab *Heuchera* capsula biloculari, etc.; a *Leptarrhena* staminibus 5, antheris bilocularibus, et seminibus alato-marginatis, nec utrinque subulatis.

[*] *Travels to the Westward of the Alleghany Mountains, &c.* Engl. Ed. p. 57, &c.

In wet places, on the very borders of North Carolina, but still within Virginia, we first met with *Trautvetteria palmata*, and *Diphylleia cymosa*, the former in full flower, the latter in fruit. *Trautvetteria*, which I doubt not is more nearly allied to *Thalictrum* than to *Cimicifuga* or *Actæa*, was collected by Pursh in Virginia, both on the Salt-Pond Mountain and the Peaks of Otter. The *Diphylleia* is confined to springy places, and the margin of shaded mountain-brooks, in the rich and deep alluvial soil so general throughout these mountains, never occurring, perhaps, at a lower elevation than three thousand feet above the level of the sea. It is a more striking plant than we had supposed, its cauline leaves (generally two, but sometimes three in number), being often two feet in diameter, and the radical ones, which are orbicular and centrally peltate, as in *Podophyllum*, frequently still larger, so that it is not easy (at this season) to obtain manageable specimens. The branches of the cyme are usually reddish or purple, and the gibbous, deep blue, and glaucous berries, are almost dry when ripe. The latter often contain as many as four perfect seeds; and it is proper to remark that the embryo is not very minute, as described in the *Flora* of *North America;* but in ripe seeds recently examined is one-third the length of the albumen, as stated by Decaisne or even longer. The cotyledons are elliptical, flattish, an nearly the length of the thick, slightly club-shaped radicle The whole embryo is somewhat flattened, so that when th seed is longitudinally divided in one direction, the embryo examined *in situ*, appears to be very slender, and to agre with De Candolle's description. The albumen is horny whe dry, and has a bitter taste. Along the road-side we shortl afterwards collected the equivocal *Vaccinium erythrocarpum* o Michaux, or *Oxycoccus erectus* of Pursh, a low, erect, dichoto mously branched shrub, with the habit, foliage, and fruit o *Vaccinium*, but the flowers of *Oxycoccus*. It here occurred a a lower elevation than usual, scarcely more than three thou sand feet above the level of the sea, and in a dwarfish stat (about a foot high); subsequently we only met with it on th summit of the *Grandfather* and other mountains which exceed the altitude of five thousand feet, where it grows commonly three or four feet high. We were too early for the fruit, a small, red or purplish berry, which does not ripen until August or September. It possesses an exquisite flavour, according to Pursh, who found the plant on the mountains of Virginia: but our friend, Mr. Curtis, informs us that it is rather insipid, and entirely destitute of the fine acidity of the Cranberry.

On the 2nd of July we continued our journey (eleven miles) to Jefferson or Ashe Court-House, a hamlet of twenty or thirty houses, and the only village in the county. Intending to make this place our head-quarters while we remained in the region, we had the good fortune to find excellent accommodation at the house of Colonel Bower, who evinced every disposition to further our inquiries, and afforded us very important assistance. We may remark, indeed, that during our residence amongst the mountains, we were uniformly received with courtesy by the inhabitants, who, for the most part, wanted the general intelligence of our obliging host at Jefferson, and could scarcely be made to comprehend the object of our visit, or why we should come from a distance of seven hundred miles to toil over the mountains in quest of their common and disregarded herbs. Objects of curiosity as we were to these good folks, their endless queries had no air of impertinence, and they entertained us to the best of their ability, never attempting to make unreasonable charges. A very fastidious palate might occasionally be at a loss, but good corn-bread and milk are everywhere abundant, the latter from preference being used quite sour, or even curdled. Sweet milk appears to be very much disliked, being thought less wholesome, and more likely to produce the milk sickness, which is prevalent in some very circumscribed districts; so that our dislike of sour, and fondness for fresh milk, were regarded by this simple people as among our very many oddities. Nearly every farmer has a small

dairy-house built over a cold brook or spring, by whi
milk and butter are kept cool and sweet in the w
weather.

We botanized for several days upon the mountains
immediate neighbourhood of Jefferson, especially the
Mountain, which rises abruptly on one side of the v
the *Phœnix Mountain*, a sharp ridge on the other side
the *Bluff*, a few miles distant in a westerly direction.
altitude of the former is probably between four and five
sand feet above the sea; the latter is apparently som
higher. They are all composed of mica-slate; and we
remark that we entered upon a primitive region immed
upon leaving the *Valley of Virginia*. The mountain
though steep or precipitous, are covered with a rich an
vegetable mould, and are heavily timbered, chiefly
chestnut, *white oak*, the *tulip-tree*, the *cucumber-tre*
sometimes the *sugar-maple*. Their vegetation prese
little diversity, that it is for the most part unnecessary
tinguish particular localities. Besides many of the
already mentioned, and a very considerable number o
thern species which we have not room to enumera
collected, or observed on the mountain-sides, *Clematis V*
in great abundance; *Tradescantia Virginica; Iris crist*
fruit; *Hedyotis (Amphiotis) purpurea*, which scarcely de
the name, since the flowers are commonly almost
Phlox paniculata? Aristolochia Sipho, without flowers or
Ribes Cynosbati, *rotundifolium Michx.*, (*R. triflorum*
and *prostratum*, (*L'Hér.*); *Allium cernuum*, and *tricoc*
Galax aphylla; Ligusticum actæifolium, the strong-s
roots of which are eagerly sought for and eaten by boy
hogs;[†] the *Ginseng*, here called *sang*, (the roots of whi

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[*] The latter is known throughout this region by the name of *Ramps*,
less a corruption of *Ramsons*, the popular appellation of *A. ursinum* in E

[†] It is here termed *Angelica*, while in Virginia it is called *Nondo*.
(*Travels*, p. 45, and p. 367), who found it in Georgia, notices it un
name of *Angelica lucida*, or *White-root* of the Creek and Cherokee

largely collected, and sold to the country merchants, when fresh, for about twelve cents per pound, or, when dried, for triple that price); *Menziesia globularis*, mostly in fruit; and the showy *Azalea calendulacea*, which was also out of flower, except in deep shade.* In the latter situations, we found an arborescent, tetramerous species of *Prinos* (in fruit only), with large and membranaceous ovate leaves. The same species has been collected on the Pokono mountains, in Pennsylvania, by Mr. Wolle, and on the Cattskills by Mr. S. T. Carey. We should deem it the *P. lævigatus*, of Pursh, (not of *Torr. Fl. Northern States*), on account of the solitary and subsessile fertile flowers, as well as the habitat, were not the flowers of that species said to be hexamerous. In damp, very shady places, high up the *Negro Mountain*, we saw an *Aconitum*, not yet in flower; and on moist rocks, near the summit, obtained a few fruiting specimens of a *Saxifraga*, which was entirely new to us. In a single, very secluded spot, on the north side of this mountain, not far from the summit, the rocks were covered with a beautiful small *Fern*, which proved

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"Its aromatic, carminative root is in taste much like that of the *ginseng*, though with more of the flavour and scent of aniseed: it is in high estimation with the Indians as well as white inhabitants, and sells at a great price to the southern Indians of Florida, who dwell near the sea-coast, where this never grows spontaneously." *Bartram*, l. c.

* Bartram well describes this species, under the name of *Azalea flammea*, or fiery Azalea. "The epithet *fiery*, I annex to this most celebrated species of *Azalea*, as being expressive of the appearance of its flowers, which are, in general, of the finest red-lead, orange, and bright golden hues, as well as yellow and cream colour. These various splendid tints are not only exhibited in separate plants, but frequently all the varieties and shades are seen on different branches of the same plant; and the clusters of the blossoms cover the shrubs in such incredible profusion on the hill-sides, that suddenly opening to view from dark shades, we are alarmed with the apprehension of the woods being on fire. This is certainly the most gay and brilliant flowering shrub yet known; the plants grow in little copses or clumps, in open forests as well as dark groves, along with other shrubs, and about the bases of hills, especially where brooks and rivulets wind about them; the bushes seldom rise above six or seven feet in height, and generally but three, four, or five, but they branch and spread their tops greatly. The young leaves are very small whilst the shrubs are in bloom, from which circumstance the plant exhibits a greater show of splendour."—*Bartram's Travels*, p. 323.

to be the *Asplenium Adiantum-nigrum* of Michau
montanum (Willd.), an extremely rare plant. It is
distinct from the *A. Adiantum-nigrum* ; being not on
smaller and more delicate species, (two to four inc
but the fronds are narrower, the pinnæ ovate, a
shorter, 3—5 parted, with the pinnulæ toothed or
the apex. The *Veratrum parviflorum* (Michx.)
quent occurrence throughout this region, but wa
fully in bloom; so that our specimens were not
until near the end of July. The plant is excellently
in the Flora of Michaux; where it is, probably wi
referred to *Veratrum*, rather than to *Melanthium* ;
divisions of the perianth (yellowish-green from the
wholly destitute of glands, and only differ from *V*
being stellate, and tapering at the base. I may he
that the name, *Melanthium*, must undoubtedly be re
M. Virginicum and *M. hybridum*. Some years
rearranging the North American species of this
followed Rœmer and Schultes in adopting the genu
thium of Willdenow, without considering that
was established by Clayton and Gronovius on *M.*
and thus taken up by Linnæus with the addition
rian plant, which belongs to *Zigadenus*.[*] The
Capense, (*Androcymbium*, *Willd.*) was added some t
wards.

The rocky summits of the mountains afforded
telephioides ; *Heuchera villosa* ; *Paronychia argyroc*
forms dense silvery tufts on the highest and mo
peaks; *Veronica officinalis*, *serpyllifolia*, and *ag*
certainly native) ; *Lycopodium rupestre*, in a very
state, and on the *Phœnix Mountain* we found a so
cimen of *L. Selago* ; *Arabis lyrata*, with perfectly

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[*] The *Helonias glaberrima*, (*Bot. Mag.* t. 1680), on which *Zig*
tatus (of Schultes), is founded, is *Z. glaucus* ; the specimens ca
ser's nursery, but doubtless were not derived from the southern
nias bracteata, (*Bot. Mag.* t. 1703), is *Z. glaberrimus*, (*Mich.*
developed.

cotyledons; *Potentilla tridentata*, which we only saw on the *Bluff Mountain*; *Woodsia Ilvensis*; *Saxifraga leucanthemifolia*, which not unfrequently attains the height of two feet, with a large and slender effuse panicle; *Diervilla trifida*, entirely resembling the northern plant; *Pyrus melanocarpa*; *Sorbus Americana*, *β. microcarpa*; *Rhododendron Catawbiense*, just out of flower, while *R. maximum*, extremely abundant along the streams and mountain-sides, was only beginning to expand its blossoms.[*] In such situations, also, we found a marked dwarfish variety of *Hedyotis purpurea*, growing somewhat in tufts, and scarcely exceeding four or five inches in height. The flowers, which are deep pink, while in the ordinary form of this region they are nearly white, present the *dimorphism* which obtains in several sections of the genus; the stamens, in some specimens, being inserted in the throat of the corolla and exserted, while in others they are inserted near the base of the tube, and included; in the former the style is uniformly short and included, and in the latter long and somewhat exserted. These two forms were often seen growing side by side, and appeared to be equally fertile. The *Amianthium muscætoxicum*, which is common in the low country of the Southern States, we here found only in the rich open woods of the *Bluff Mountain*, and in similar places farther south. The flowers are pure white or cream-coloured, in a dense and very showy raceme, at length changing to green. The cattle, which roam in the woods for a great part of the year, are sometimes poisoned by feeding, as is supposed, on the foliage of this plant during the autumn; hence its name of *Fall-poison*. The wild *Pea-vine*, which is so highly prized as an autumnal food for cattle, is the *Amphicarpæa*.[†] The *Lily of the Valley*, (*Convallaria majalis*,) which we occasionally met with in fruit, appears to

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[*] These shrubs bear the name of *Laurel*; while the *Kalmia latifolia* is universally called *Ivy* or *Ivy-bush*.

[†] In the large woods, the surface of the soil is covered with a species of *wild peas*, which rise three feet above the surface of the earth, and of which the cattle are very greedy. They prefer this pasture to every other, and when removed from it they fall away, or make their escape to return to it."—Michaux (F. A.) *Travels*, p. 316.

be identical with the European plant. It extends
mountains of Virginia to Georgia, where it was
noticed by the younger Bartram. We also collecte
some *Phlox*, of frequent occurrence in rich woo
differs from *P. Carolina* (with which it has perl
confounded) in its perfectly smooth stem, and bro
pointed calyx-teeth. The leaves are sometimes a
width, and four or five in length; the uppermost of
lanceolate, and more or less cordate at the base.

A species of *Carex*, nearly allied to *C. gracillim*
in the greatest abundance on all the higher mou
North Carolina, forming tufts on the earth or on
flowering throughout the summer. On this acc
called *C. æstivalis* by Mr. Curtis, who discovered
years since, and pointed out its characters.* W
with *C. canescens*, *Linn. ex Boott*, (*C. Buxbaumii*, *W*
C. conoidea, (*Schk.*), on the moist, grassy brow of a

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* *C. æstivalis* (M. A. Curtis, ined.): spicis 3-5 gracilibus laxiflori
infima pedunculata, cæteris subsessilibus, suprema androgyna infe
bracteis inferioribus foliaceis vix vaginantibus superioribus setace
ovoideis trigonis basi apiceque acutiusculis obsolete nervosis glabr
tegro squamam ovatam obtusam (nunc mucronatam) duplo s
stigmatibus tribus, vaginis foliorum inferiorum pubescentibus.

Hab. in montibus altioribus Carolinæ Septentrionalis ubique.
gusto floret.—*C. gracillimæ* nimis affinis; at diversa, culmis foliis
oribus, vaginis infimis pubescentibus; bracteis vix vaginantibus; sp
oribus et laxifloris erectis, superioribus brevissime pedunculatis;
longo-ovoideis magis stipitatis.

The figure of *C. gracillima*, in Prof. Künze's *Supplement to Schk*
is excellent; except that the immature perigynia are represente
distinct beaks than I have ever seen. To this genus, already
most extensive in the vegetable kingdom after *Senecio*, Mr. S
recently added another species, an account of which may be app
note. As Dr. Boott had already dedicated it to the zealous discov
being aware that the latter had distributed it under another name,
be allowed to publish the notes of this sedulous Caricographer un
C. Sullivantii (*Boott*): spica mascula solitaria cylindrica, fœminei
dricis erectis gracilibus pedunculatis laxifloris, superioribus conti
remota longe pedunculata basi attenuata, stigmatibus tribus, perigy
brevirostratis emarginatis pellucido-punctatis apice marginibusque
dis squamam ovatam ciliatam hispido-mucronatam subæquantibus.

" *Culmus* bipedalis, gracilis, triqueter pilis albis sparsis longis sc
pars spicas gerens 2-9 uncialis. *Folia* 2 lin. lata, culmo breviora,

of the *Bluff*; and, towards the base of the *Negro Mountain*, we observed *C. virescens*, and *C. digitalis* (*Willd.*)

In a cool sequestered brook, we found the true *Cardamine rotundifolia*, (*Michx*,) growing like a Water-cress, (for which it might be substituted, as its leaves have exactly the same taste,) but producing numerous stolons, two to three or more feet in length. These runners arise not only from the base of the stem, but from the axils of the upper leaves, and very frequently from the apex of the weak ascending raceme itself, which is thus prolonged into a leafy stolon, hanging down into the water or mud, where it takes root. Its habit and appearance are so unlike even the summer state of our northern *C. rhomboidea*, that we could not hesitate to consider it a distinct species. The subjoined diagnostic character will doubtless suffice for its discrimination.*

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nervisque scabris. *Bractea* infima vaginans, foliacea, culmum adæquans, reliquæ sensim breviores, superiores evaginatæ demum setaceæ. *Spica mascula* uncialis, vix lineam lata, sessilis vel brevi-pedunculata: squamæ muticæ, obtusæ, apice ciliolatæ, nervo scabro, pallide castaneæ. *Spicæ fœmineæ* 3-5, laxifloræ, 1-1⅓ uncias longæ, 1-1½ lineas latæ; superiores contiguæ; infima remota (uno exemplo basi composita): squamæ pellucidæ ciliolatæ, nervo viridi scabro, hispido-mucronatæ. *Pedunculi* scabri, superiores sensim breviores. *Perigynium* (vix maturum) 1⅛ lin. longum, ⅞ lin. latum, viride, enervium (?) apice hispidulum, ciliatum, brevi-stipitatum, squamam subæquans vel eo paululum longius. Achenium immaturum."—*Boott in Litt.*

Hab. in sylvaticis prope Columbum, Ohionis, ubi detexit *W. S. Sullivant*, cum *C. pubescente*, *C. gracillima*, etc. vigens. Affinis *C. arctatæ*, (*C. sylvaticæ*, *auct. Amer.*) ex. cl. Boott.—In exemplis nuperrime receptis, perigynia satis matura sunt ovato-elliptica, lata, compresso-plana, enervia (marginibus exceptis) apice vix rostrata.

* Cardamine *rotundifolia* (*Michx.*); glaberrima decumbens, stolonibus repentibus, radice fibrosa, foliis omnibus conformibus (radicalibus sæpe trisectis, segmentis lateralibus parvis), petiolatis rotundatis plerumque subcordatis integriusculis vel repando-inuatis, siliquis parvis stylo subulatis, stigmate minuto, seminibus ovalibus.—*C. rotundifolia Michx.*, *Fl.* 2, p. 30; *Hook. Bot. Misc.* 3, t. 109, (statu vernali; in exemplis Carolinianis folia caulinia magis petiolata;) Darlingt. *Fl.* Cest. ed. 2, p. 384. C. rotuudifolia γ. *Torr. et Gray, Fl. N. Amer.* 1, p. 83.

Hab. in rivulis fontibusque opaculis montium Carolinæ, Virginiæ, Kentucky, et in Pennsylvania.

Characters of Three New Species of CHRESTA; *with R*
on the identity of PYCNOCEPHALUM *and* CHRESTA
GEORGE GARDNER, ESQ., F.L.S.

(*With Two Plates.* TABS. VIII. IX.)

Among my collections from the interior of Brazil,
three species of *Compositæ*, belonging to the division
tineæ, which appear to be new. One, from its characte
habit, is referable to the genus *Chresta*, a second to *Pycno*
lum, and the third belongs neither to the one nor to the
but forms a kind of intermediate species. The genus
cephalum was established by DeCandolle in the fifth vol
the *Prodromus*, on Lessing's section of *Vernoniæ* of th
name; but after a careful examination, not only of m
three species, but of the whole described species of *C*
and of *Pycnocephalum plantaginifolium*, I have satisfied
that the two genera do not differ essentially from each
The only distinctive marks which the generic chara
the *Prodromus* contains to separate them, are the
striated scales which are said to surround the base
capitula, in the shape of an involucre in *Pycnocephalu*
not in *Chresta;* and the scapose habit of the former,
in the latter is ramose. In *Pycnocephalum plantaginif*
do not find any greater developement of scales surro
the capitula than is to be seen in *Chresta exsucca*, f
ample; and in both they are nothing more than the
external scales of the involucre of the capitula them
Habit is also but of little value as a distinctive charact
it is no uncommon thing to find small plants of *Chre*
succa with only a single branch, and then it becomes
species of *Pycnocephalum*, particularly as the leaves
group are not always radical; for, in my species which b
to it, they are borne upon a suffruticose stem, whic
to the height of about six inches. From these con
tions I propose to unite the two genera, forming the ge

stituted into two sections, the characters of which are de-
d from the habit of the plants. *Chresta*, being the older
e of the two, I retain, and shall now proceed to give an
nded character of the genus, and a list of the species,
ding the characters of my three new ones.

ESTA. *Vell. Fl. Flum. vol.* 8. *t.* 150, *D.C. Prodr.* 5.
85. *Endl. Gen. Plant. n.* 2230.—PYCNOCEPHALUM.
C. *l. c. p.* 83. *Endl. l. c. n.* 2225. Vernoniæ *sectio*
cnocephalum, *Less. in Linnæa, vol.* 6. *p.* 630.

pitula plurima, 2-12 flora, homogama, densissima, con-
, in glomerulum subglobosum involucri generalis destitu-
Invol. squamæ imbricatæ siccæ, oblongo- vel lineari-
olatæ, basi nervosæ. Cor. regulares, quinquefidæ, pur-
æ aut roseæ. Achænia sericeo-villosa. Pappus plurise-
, setaceus, scaber; setis exterioribus paucis brevioribus,
m interiores æquantibus.—*Herbæ vel Suffrutices Bra-*
ses, velutinæ, vel pubescenti-tomentosæ, scapigeræ vel ra-
. *Folia alterna, coriacea, integerrima aut dentata.*

r. 1. EUCHRESTA.—Herbæ vel suffrutices ramosæ,
mis plerumque elongatis tomentosis nudis, glomerulo
bgloboso terminatis.
. *sphærocephala.* *D.C. Prodr.* 5. *p.* 85. *Gardn. Herb.*
rasil. No. 4193 et 4817.
. *pycnocephala.* *D.C. l. c. Gardn. Herb. Brasil.* No.
19.
. *exsucca.* *D.C. l. c. Gardn. Herb. Brasil.* No. 3260,
03 et 4194.
. *alpestris,* (sp. n.) *Gardn. Herb. Brasil.* No. 4820;
llo crasso lignoso dense tomentoso, caulibus herbaceis
arse foliatis vix ramosis, foliis radicalibus coriaceis petio-
tis spathulato-oblongis obtusis integerrimis lanato-tomen-
sis, caulinis similibus brevioribus, ramis terminalibus
omerulo globoso terminatis, lateralibus brevibus glomeru-
m abortivum gerentibus, capitulis oblongis sub-12-floris,

invol. squamis oblongis obtusis 3-nerviis apice tome
ciliatis, achænio basi piloso.

HAB. In saxosis alpestribus in districtu Adamantum
vinciæ Minarum Generalium Braziliæ, florens Julio.

Herba 2-pedalis. Radix usque ad collum lignosa. C
erectus. Folia radicalia 6 poll. longa, pollicem lata: p
basi dilatati. Pappus pluriserialis rufescens, setis sc
ext. dimidio circiter brevioribus. Cor. purpureæ, seg
tis extus pilosis.

5. *C. augustifolia,* (sp. n.) *Gardn. Herb. Brasil.* n. 3
caule suffruticoso subramoso apice dense folioso,
longe et anguste linearibus utrinque attenuatis gl
uninerviis, pedunculis elongatis striatis, capitulis p
cylindraceis 6-7-floris in glomerulum terminalem laxe
gestis, invol. squamis lineari-lanceolatis acuminatis
3-nerviis glabris apice subciliatis, achænio piloso. (
VIII.)

HAB. In umbrosis montosis apud Villa de Arrayas Prov
Goyazanæ Brasiliæ, florens Aprili.

Suffrutex 2-pedalis. Caulis erectus, subramosus, apic
misque dense foliosus, basi aphyllus. Folia 3-4 poll
longa, lineam lata. Pedunculi apice incrassati. P
subrufescens pluriserialis, setis scabris, ext. multo br
ribus. Cor. purpureæ glabræ; tubus gracilis.

Tab. viii. fig. 1. Chresta angustifolia, *nat. size;* fig. 2. fl
fig. 3. longer and shorter bristles of the pappus; fig. 4.
from the involucre—*magnified.*

SECT. 2. PYCNOCEPHALUM.—Herbæ perennes vel s
tices scapigeræ, scapo simplici tomentoso.

6. *C. speciosa,* (sp. n.) *Gardn. Herb. Brasil.* n. 3801;
suffruticoso simplicissimo apice folioso profunde s
velutino-tomentoso, foliis coriaceis longe spathulato-la
latis basi angustatis apice dentato-serratis valde st
nervosis glabris, pedunculis solitariis elongatis s
lanato-tomentosis basi bracteatis, capitulis cylind
6-7-floris in glomerulum terminalem aggregatis,

squamis lanceolatis acuminatis multinerviis apice tomentosis ciliatis, achænio dense sericeo-villoso. (TAB. IX.)

HAB. In graminosis montosis apud villa de Arrayas, Provinciæ Goyazanæ Brasiliæ: florens Aprili.

Suffrutex, 2-pedalis. Caulis erectus. Folia 6-9 pollices longa, 15 lin. lata. Pedunculi apice incrassati. Pappus pluriserialis, lucens, albidus, facile deciduus in achæniis adultis, setis linearibus planis ad margines pilosis, ext. multo brevioribus. Cor. roseæ glabræ.

TAB. IX. Fig. 1. Chresta speciosa, *nat. size;* fig. 2. floret, do.; fig. 3. thirteen bristles from the pappus; fig. 4. scale from the involucre; *magnified.*

7. *C. spathulæfolia.* Pycnocephalum spathulæfolium, *D.C. Prodr.* 5. *p.* 83.

8. *C. scapigera.* Pycnocephalum scapigerum, *D.C. l. c.*

9. *C. plantaginifolia.* *Gardn. Herb. Brasil.* n. 4196. Pycnocephalum plantaginifolium, *D.C. l. c.*

De Candolle remarks that *Chresta* is related, on the one hand to *Elephantopus*, and on the other to *Lychnocephalus;* but its nearest affinity is certainly with *Albertinia*, from which it only differs in its less fruticose habit; for the technical characters are scarcely sufficient to distinguish them, particularly if we compare *Albertinia bicolor* with *Chresta sphærocephala.*

Kew, April, 1842.

The PLANTS OF THE GRAMPIANS, *viewed in their relations to Altitude.* *By* HEWETT C. WATSON, ESQ. F.L.S.

(Second Paper.)

In a former paper bearing this title, and printed in the first and second Numbers of the London Journal of Botany,* some explanations were given respecting the method adopted for ascertaining the range of elevation for the various species of plants found on those elevated chains of hills which stretch across Scotland about the latitudinal parallel of 57°, and which were spoken of collectively under the general designation of the "Grampians."

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* See page 50 of the present volume.

Those explanations were introductory to two tabular catalogues of all the species of phanerogamous plants said to grow on those mountains, having been seen by myself there, or reported to have been found by other botanists. In the first table, the names of the plants followed each other according to the heights of the *loftiest* spots on which the different species had respectively been observed; and in those instances where I had seen the same species in different portions of the general chain, the heights of a second and third locality were likewise added. A second and shorter list included the alleged localities of some species which had not been seen amongst those mountains by myself, and the localities for which had been too vaguely indicated by others, for their heights to be estimated with any confidence of accuracy.

In order to illustrate completely the *ranges* of altitude for the several species, as far as yet ascertained, it is necessary to add a similar account of their *lower* limits. For this purpose we shall require an enumeration of those species only which seldom or never descend to the low grounds, except in localities more northerly than the tract of mountains under consideration. By far the greater number of the plants included in the first of the former tables, may be found on the low plains or in valleys southward of the Grampians, so that their lower limits become questions of latitude, not of elevation, and may here be left out of consideration.

In attempting to ascertain the lower limits of the species in respect of absolute altitude, we unavoidably increase the space of country over which our observations must extend, and thus proportionably increase the number of local variations in height, connected with the modifying influence of local peculiarities of the surface. Alpine plants in general descend lower on the northern, than on the southern sides and bases of tains,—lower in the deep and dark valleys in the midst tract of mountains, than in the more open valleys or about their outskirts,—lower among shaded rocks, on the more gradual declivities,—lower near the sea- than in places more inland. These differences appa- depend chiefly upon the cooler summer temperature ore humid atmosphere of such spots as tend to pro- alpine plants at inferior elevations. But all alpine s have not an equal tendency to descend into dark or along the courses of streams, or to grow upon l rocks or near the sea shore. The consequence is, such situations several species are occasionally found ow others, with which they are naturally associated by e, when they grow in similar situations; and their abso- titude thus becomes an imperfect guide to their true e positions as determined by climate.

example of these changes of altitude, we may take *procumbens* and *Salix herbacea.* The former is often seen the latter, as we ascend the moory hills about the more l and inland portions of the Grampians; but the latter a greater aptitude for growing among rocks, about the of streams, and in maritime places, it may in these situations be found several hundred feet below the ies of *Azalea procumbens* on open summits or declivities great distance. So likewise, on the inland hills of the pian chain, we often see *Gnaphalium supinum* and *Epi- alpinum*, commencing nearly together, at several hun- feet of elevation; yet the latter is reported to have ed down the course of the Dee, so low as to be now established by the side of that river, near the coast of Aberdeen. On the Grampians, also, *Dryas octope-* s found only on rocks upwards of two thousand feet the sea, while *Juncus triglumis* occurs as low as seven- r eighteen hundred feet. Yet in the north of Suther- the *Dryas* may be seen abundantly on cliffs and moors, down to the sea level, while I am not aware that *triglumis* ever occurs so low.

By reason of these local changes in relative position, becomes difficult to determine the true places of many species in a list where the names are intended to follow each other i accordance with the natural limits of the species. Not onl would the series be varied in distant parts of the same island but even in a list of plants for a space so circumscribed as th one now under notice, the relative position of the names wil vary according to the situations in which the plants hav been observed. Hence it will unavoidably happen, that th following series of names, where they succeed each othe nearly in accordance with the absolute altitude of the lowes spots in which the plants have been observed, does not al ways indicate the true position of the plants, one relativel to the others, in general climate. As a counterbalance to thi unavoidable defect, I have occasionally added indications o other localities, beyond the tract of the Grampians, whic tend to correct imperfect inferences respecting the climate o the plants, such as would be drawn if their ranges of heigh in the one tract were alone regarded. Thus, looking to th heights given for *Dryas octopetala*, on the Grampians, i might be supposed more exclusively an alpine plant than *Azalea procumbens* or *Salix herbacea;* but when we also lear that it grows in abundance on moors about the sea-level, in Sutherland, and likewise at a moderate altitude in Yorkshire, we avoid the erroneous inference respecting the climate of this plant, which its very partial distribution on the Grampians might lead us to form.

Here, as in the former paper, the names of the species correspond with those in the "British Flora;" and it has, in consequence, been deemed unnecessary to add the authority after each name.

Lower Limits of Plants on the Grampians.

Luzula arcuata. Seen only on the summit of Ben-na-muick-dhu, whose height I have estimated at 4,300 feet. (But since this plant is reported also to grow on Fonniven and Ben-More, in Sutherland, it must be found in that county at a much lower elevation; the heights of those two hills being probably between 3,000 and 3,500 feet.)

Saxifraga cernua. The lowest specimens that I saw upon Ben Lawers, were 250 feet below the summit, or at 3,750 feet above the sea. It is reported to grow on the neighbouring hill of Craigalleach, which cannot very much exceed 3,000 feet in absolute height.

Draba rupestris. Observed at 3,700 feet on Ben Lawers. Dr. Graham reports that he gathered it on some neighbouring hill, where it is probably lower than on Ben Lawers. (It is also said to grow on Ben Hope, in Sutherland, a hill of only 3,000 feet.)

Lychnis alpina. The height of its locality, on the Clova mountains, has been roughly guessed at 3,200 feet.

Cerastium latifolium. I observed this on rocks of 3,100 feet on Ben Lawers. It is probably lower on Ben Lomond.

Myosotis alpestris. At 3,100 feet, among the rocks, above the lake, on Ben Lawers. Perhaps at a lower elevation on other hills of the Breadalbane range.

Juncus biglumis. In one place as low as 2,800 feet on the mountains between Ben Lawers and the Lochy; though seldom seen much below 3,000. (If really found on Goat Fell, in Arran, a hill of 2,900 feet, we might expect it even below 2,800 feet, on the Grampians.)

Statice Armeria. I have not observed this below 2,800 feet on the Grampians, the height at which it was noticed near Killin. (It is a well-known sea-side plant; and in Cumberland, I saw it on rocks at about 1,000 feet of elevation.)

Saxifraga rivularis. A peculiarly alpine plant, though growing so low as 2,700 feet under the dark precipices of Ben Nevis, where it is kept cold and damp by the little rills trickling down from the melting snow above.

Stellaria cerastoides. Also at 2,700 feet, in the same situation, on Ben Nevis. Elsewhere I have not seen it so low as 3,000.

Menziesia cærulea. Mr. Brand estimated the height of its locality, at 2,600 or 2,800 feet. The height of the hill on which it grows has been since computed at 2,740 feet, and it would seem, from Mr. Brand's report of the locality, that it is very near the summit, and consequently about the medium height estimated by that gentleman.

Carex aquatilis. Table land of Clova, say 2,700 or 3,000 feet.

Sesleria cærulea. At about 2,600 feet on the mountains near Killin. (Probably half that elevation in Yorkshire.)

Arenaria rubella. At 2,550 feet on Craigalleach, near Killin. (Near this locality, on Craigalleach, there is a large mass of rock projecting out so as to form a good shelter in stormy weather, and apparently much resorted to by sheep and alpine hares. Close about the sheltered spot where they tread, some plants grow which are frequent about inhabited places in the low country, but which are very rarely seen on the upper parts of the mountains; namely, *Urtica dioica*, *Stellaria media*, *Poa trivialis*, and *Ranunculus repens*. The same plants appear about the sheep-pens at 1,500 or 2,000 feet of elevation, although scarcely ever seen on the surrounding moors at the same height. It may hence be inferred that the want of manured soil, not the alpine climate, is the true cause of their usual absence from the higher moors and mountains.)

Cherleria sedoides. Shortly above Loch-na-Cat, on Ben Lawers, at 2,500 or 2,600 feet; but not seen below 3,000 feet on the grassy southern declivity of the same hill. (N.B. Macculloch says that the lake is 1,000 feet below the summit of Ben Lawers; while my own calculation, on a very stormy day, made a difference of 1,600 feet. This is the widest discrepancy I have ever found between the results of my own observations with the sympiesometer, and those obtained by other persons. I feel convinced that Macculloch has underestimated the distance from the summit. Whether I have erred on the other side, remains for some future observer to decide. Macculloch's estimate would make the lake 3,000 feet above the sea; my own reduces it to 2,400. Another observation, made among the rocks considerably above the lake, gave me 3,150 feet; yet I scarcely deemed this spot more than 500 feet above the lake at the time, and judging by the eye alone.)

Carex saxatilis. In a corie, facing north-west, in Drumochter Forest, at 2,500 feet. Not observed below 2,800 on the Breadalbane mountains.

Salix reticulata. Rocks about the Clova mountains, 2,500 eet, more or less. At 2,600 feet on the mountains near Killin.

Carex atrata. Rocks about the Clova mountains, 2,500 eet, more or less. At 2,550 feet, on the Killin mountains.

Dryas octopetala. Rocks on the Clova mountains, 2,500 eet, more or less. At 2,550 on Craigalleach, near Killin. Sea-level in the north-west of Sutherland.)

Astragalus alpinus. Rocks in Glen Dole, Clova, at 2,500 eet, or upwards.

Poa alpina. Rocks between Clova and Castleton, at 2,500 eet, more or less. Probably 2,700, or upwards, on the Killin mountains. (Lower in Yorkshire, if really found in that ounty.)

Erigeron alpinus. Clova rocks, 2,500 feet, more or less. Not so low on Ben Lawers.

Salix lanata. Rocks between Clova and Castleton, 2,500 eet, or upwards.

Veronica alpina. Clova rocks, 2,500 feet, more or less. On Ben Aulder, at a height that could scarcely exceed 2,500 nd might be lower.

Carex Vahlii. Clova rocks, 2,500 feet, more or less.

Alopecurus alpinus. Clova table-land; perhaps not more han 2,400 feet in one spot, though usually higher.

Phleum alpinum. Clova table-land, at the same elevation s the preceding.

Juncus castaneus. Clova table-land, perhaps below 2,400 eet, in one spot. On the Killin mountains, at 2,800 feet.

Cerastium alpinum. At 2,300 feet, on rocks by a stream escending the Killin mountains. Varying between 2,500 and 2,700 on the open declivities of the Breadalbane mountains north-west of Loch Tay.

Carex rariflora. Low on the table land of the Clova mountains; say 2,300 feet.

Apargia Taraxaci. About 2,300 feet, on the Clova mountains; but I have seen specimens at a much lower elevation, which I was doubtful whether to name *A. Taraxaci*, or *A. autumnalis.*

Aira alpina. Somewhere between 2,000 and 2,500 feet, on Ben Nevis; and a viviparous form of this, or of *A. cæspitosa*, at 2,250 feet, on the Killin mountains.

Veronica saxatilis. On rocks in Glen Dole, Clova, probably about 2,000 to 2,200 feet; but not seen so low elsewhere.

Juncus trifidus. At about 2,000 feet, on the gravelly bed of a stream from Ben-na-Bourd. Moor above Drumochter Pass, at 2,050. Clova mountains, about 2,300.

Saussurea alpina. Clova, lower rocks, 2,000 feet or upwards. By a stream on the Killin mountains, at 2,300. (Said to grow in Annandale, Dumfries-shire, where it may be lower.)

Sonchus alpinus. The old locality, at the head of Glen Dole, Clova, is guessed at 2,000 to 2,200 feet.

Arabis petræa. Gravelly bed of a stream from Ben-na-Bourd, probably about 2,000 feet.

Oxytropis campestris. The Clova locality is about 2,000 feet.

Saxifraga nivalis. Two or three poor specimens below the *Oxytropis campestris*, at Clova. Very rare below 2,500 feet. On the Killin mountains, at 2,550.

Draba incana. Lower rocks of Clova, say 2,000 feet. Killin mountains, 2,500. (At the sea-level on the north coast of Sutherland. Probably at 1,500 or 2,000 feet in Yorkshire.)

Spergula saginoides. By a stream, near Dalwhinnie Inn, at 1,950 feet. Respecting the lower limits of this plant, I feel very uncertain, but I think that it occasionally grows elow the height here stated.

Hieracium alpinum. By the lake on Ben Nevis, about ,850 feet. By a stream from Ben-na-Bourd, at 1,950. Drumochter Forest, at 2,050. Clova mountains, about ,250.

Azalea procumbens. By the lake on Ben Nevis, about ,850 feet. Drumochter Forest, at 2,050. On Gnarrow, at ,200. (About 1,500 feet on Ben Hope, in Sutherland.)

Salix herbacea. By the outlet of the lake on Ben Nevis, ,850 feet. On the north side of Gnarrow, at 2,200. Drumochter Forest, at 2,400. On the Killin mountains, bout 2,400. (Said to grow at an inconsiderable altitude, on he north coast of Sutherland. Perhaps as low as 2,300 feet n Yorkshire.)

Carex rigida. By the lake on Ben Nevis, 1,850 feet. Gnarrow, 2,200. Drumochter Forest, 2,300. Ben Lawers, 2,400.

Arbutus alpina. By the lake on Ben Nevis, 1,850 feet. Red Cairn, 1,900. Drin Fad, in Locheil, 2,300. (At the ea-level in the north-west of Sutherland.)

Veronica humifusa. Probably below 1,800 feet, in Dru-mochter Pass. I scarcely know at what altitude to place the ower limit of this variety: it is abundant from 2,000 to 3,000 eet, or upwards.

Juncus triglumis. At 1,750 feet, on the Killin mountains. Drumochter Forest, at 2,100. Probably at a lower elevation.

Rubus Chamæmorus. Drumochter Pass, 1,750 feet. Killin mountains, 2,350. (Probably lower, as the locality of East Cairn, in the Pentland chain, can scarcely exceed 1,800; and hose of Cleghorn and Bonnington woods, if accurate, must e much lower, though considerably to the south of the Highlands.)

Cornus Suecica. Drumochter Pass, 1,750 feet. Ben Lawers, ,400. I believe to have seen it lower in Forfarshire. (Hole f Horcum, Yorkshire, which must be of trifling altitude.)

Carex capillaris. On a low hill by Castleton, in Braemar, at 1,700 feet. Killin mountains, at 2,250. (Among corn fields on the east coast of Ross. Sea-level at the mouth of the Naver, and by Loch Erboll, in Sutherland.)

Betula nana. Braemar, at about 1,600 feet. Gnarrow, at 1,800. Ben-na-Bourd, at 1,950. (Probably the locality of "Bertram, a mile from Carnwath," in Lanarkshire, is considerably lower.)

Luzula spicata. Braemar, at 1,600 feet, or lower, on a stone wall; Ben Lawers, at 1,800, on a bank by a stream. Foot of Ben-na-Bourd, by a stream, 1,950. North side of Gnarrow on the open moor, at 2,500.

Sibbaldia procumbens. Pass of Drumochter, at 1,500 feet, by the course of a stream. Clova mountains, 2,250. Ben Lawers, 2,450. Rarely seen below 2,000 feet; and usually a more strictly alpine plant than several of those above mentioned.

Vaccinium uliginosum. Near Inverary, probably below 1,500 feet. Drumochter Pass, 1,800. (At about the same height in the lake tract of Cumberland; but lower in other situations, according to Winch.)

Potentilla alpestris. On the lower rocks of Clova, perhaps down to 1,500 feet. (Equally low, or lower in England.)

Gnaphalium supinum. Drumochter Pass, by a stream, at 1,400 feet. Ben Lawers, on the open moor, at 1,800. Not often seen so low as 1,400 feet.

Silene acaulis. By a stream from the Red Cairn, at 1,250 feet. Killin mountains, also by a stream, at 1,750. By the lake on Ben Nevis, at 1,850. (As low as 1,450 feet, in Caernarvonshire.)

Saxifraga hypnoides. Clova, at 1,200 feet. (Grows in various places in Scotland, England, and Wales, at or below 500 feet.)

Tofieldia palustris. By the Garry, at Dalnacardoch, at 1,050 feet. On Ben Lawers, at 1,200.

Hieracium prenanthoides. By the Garry, at Dalnacardoch, at 1,050 feet. Castleton, 1,100, or rather less. Killin mounains, at 1,850. (Said to grow at Cramond Bridge, near Edinburgh, where the altitude must be trifling.)

Salix arenaria. Dalnacardoch, at 1,050. Dalwhinnie, at ,200. (Water of Leith, near Currie, at a much lower altitude.)

Thalictrum alpinum. Dalnacardoch, 1,050 feet. Clova ountains, about 1,500. Killin mountains, about 2,000. Among corn-fields, near the east coast of Ross. Sea-level the north of Sutherland. Perhaps some of the localities Caernarvonshire are of trifling altitude.)

Saxifraga oppositifolia. Near Loch Larricillie, in Glen rgill, at 950 feet. By the Garry, at Dalnacardoch, at 1,050. Clova, at 1,200, or 1,400. Near Killin, at 1,350. Drumochter Forest at 1,350. (At the sea-level, in the north-west of Sutherland.)

Epilobium alsinifolium. At 800 or 850 feet, in Glen Clova, growing in a spring of cold water. Drumochter Pass, at 1,400. (At 600 feet, by a waterfall in Caernarvonshire.)

Oxyria reniformis. Glen Clova, about 800 or 850 feet. Between Loch Tay and Loch Dochart; road-side between King House and Inveroran; between Pitmain and Dalwhinnie, near Etrish bridge—heights probably from 600 to 1000 feet. (I have seen it at 1,150 feet in Caernarvonshire; and Llanberris lake, on whose margins it is said to grow, must be considerably lower.)

Rhodiola rosea. Fall of Foyers, according to the Flora of Moray. (I do not recollect to have seen it very low on the Grampians; but as it grows on sea cliffs in Berwickshire, and t a moderate height in Cumberland, it is not exclusively an lpine plant.)

Saxifraga stellaris. I believe I have seen this near the evel of the sea in Argyle or Dumbartonshire. Drumochter Pass, at 1,400 feet. (As low as 600 feet in Caernarvonshire.)

Pyrola secunda. Near the sea-level, at the mouth of the Lossie, according to the Flora of Moray. I have observed t at an altitude of 1,600 or 1,800 feet, in the Pass of Drumochter. (In Cumberland, perhaps about 1,500 feet.)

Epilobium alpinum. On the north bank of the Dee, above the old bridge, near Aberdeen, as reported in the *Flora Abredonensis.* At 1,400 feet, in Drumochter Pass. At 1,500 feet, on Gnarrow. By a stream on Ben Lawers, at 1,800.

Alchemilla alpina. By the Dee, not 50 feet above the sea, as reported in the Flora of Aberdeen. Tay-Head, by the river Tay, at 400 feet. Glen-Coe, probably 500 feet.

Saxifraga aizoides. North bank of the Dee, a mile above the old bridge, Aberdeen, as stated in the Flora of Aberdeen. Near Fort William, a few feet above the sea. Shortly above Lochearn-head, about 400 feet. Loch Dochart and Ben Lawers, about 600.* (At 250 feet in Cumberland.)

Arbutus Uva ursi. Near Aberdeen, as reported in Mr. Dickie's Flora. Heath between Blair and Dalnacardoch. (Southward from the Grampians it is rare, and seen only at some hundred feet of elevation.)

Galium boreale. Banks of the Dee, according to the Flora of Aberdeen. On the Island at Inverness, which must be near the sea-level, as reported in the Flora of Moray. Lochearn-head, 350 feet. Tay-Head, 400.

Carex pauciflora. I know not the lower limits of this species; but it certainly descends low down the sides of the hills.

The following species may be regarded as plants of the sea-level, in the country bordering on the Grampians, though very rarely, or never, seen quite so low to the southward of the Tay and Clyde; namely, *Vaccinium Vitis-Idæa, Polygonum viviparum, Festuca vivipara, Meum athamanticum, Subularia aquatica, Cnicus heterophyllus, Linnæa borealis, Empetrum nigrum,* (Sea-banks, Berwick), *Trientalis Europæa, Listera cordata, Habenaria albida,* and *Rubus saxatilis.*

All other species, enumerated in the first list of the former paper, may be said to grow at or near the sea-level round the base of the Grampians, or in more southern localities. Several of the above, it will be seen, are occasionally found as low, either near to, or northward from, the Grampian tract. About fifty of the species have not yet been ascertained to grow below several hundred feet of altitude, in any part of Scotland. Ten or twenty species mentioned in the second able may be similarly circumstanced; the rest being either doubtful as natives, or doubtful as species, or else local plants n the tract of the Grampians, but known to grow much lower lsewhere.

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* I have seen it on the banks of streamlets, at their confluence with Loch Lomond.—Ed.

The following certainly grow at moderate altitudes in some parts of Scotland or England; namely, *Thlaspi alpestre*, *Arenaria verna*, *Sedum villosum*, *Carex limosa*, *Festuca Calamaria*, and *Avena strigosa*. *Avena alpina* appears to be only a mountain form of *Avena pratensis*, as I have gathered specimens of the latter between 1,500 and 1,800 feet, on the mountains of Perth, Forfar, and Aberdeen shires, scarcely distinguishable from those of *Avena alpina*, in Smith's Herbarium. *Carex phæostachya* is regarded as a variety of *Carex panicea*. And *Carex stictocarpa* is united to *Carex recurva*, in the fourth edition of the British Flora.

From the notices here given respecting the lower limits of the species, taken in connexion with the table indicating their highest ascertained limits, the Flora of any fixed heights on the Grampians, between the bases and summits, may be readily calculated, with the exception of the genus *Salix*. Of this genus, I should guess that about thirty species, or well-marked varieties usually accounted species, may be found below 1000 feet, about the Grampians; perhaps twenty species between 1000 and 2000 feet; ten or fifteen species between 2000 and 3000 feet; but I do not recollect to have seen any willows above 3000 feet, except *S. herbacea* and *S. reticulata*.

It would encrease the value of these notes, for the purposes of the botanical geographer, if the climate of different elevations of the mountains under consideration were likewise exhibited. I fear my notes are insufficient to do this with much exactness; but as I was necessarily recording the temperature of the atmosphere, from time to time, for the sake of calculating heights; and as I also occasionally noted down the temperature of springs, there are some *data* in my note-book, which may illustrate the summer temperature of the earth and atmosphere, in a general way. If, on examination, they prove adequate to this object, I may offer a few pages upon the subject to the readers of this Journal, in some future number. Meantime, the result of observations made several years ago may be seen in the Magazine of Natural History, seventh volume, page 444, or in my small volume published under the title of "Remarks on the Geographical Distribution of British Plants," pages 27—30. Numerous notes of temperature made on the Grampians, in 1841, will carry forward that branch of the subject somewhat farther, when compared and reduced into methodical form, which has not yet been done.

On the Position to be assigned to the Genus CNEORUM *in the Natural Series. By* P. B. WEBB, ESQ.

It has long been a matter of doubt to what Class among its congeners the little group of *Cneorum*, containing, even now, only two forms, can be rightly referred. To the older of these Linnæus applied the name of *Cneorum*, though it was neither the κνέωρον, of Theophrastus, nor the θυμελαία or κνέωρον of Dioscorides, species of Daphne, (*Daphne Gnidium* and *Daphne oleifolia ?*) the former of which yielded the once well-known *Gnidium Granum.* It may possibly have been one of the plants confounded by Pliny under the names of *Thymelæa, Chamelæa, Cneorum*, and *Oleastellum ;* it is not however a native of Greece or Asia, nor, properly speaking, of Italy. To this, (the *Cneorum tricoccum*, L.) Ventenat added a second species, *Cneorum pulverulentum*, raised in the garden of Cels, from seeds sent by Broussonet from Teneriffe. When Jussieu arranged all the known genera in Natural Orders, he placed *Cneorum* in the second section of his *Terebinthaceæ*, a provisional union, as he himself declares, the component parts of which have been variously divided, and classed by subsequent botanists. None however have iven a positive position to *Cneorum*. Mr. Brown, in his Suplement to Tuckey's Voyage, does not allude to it. Künth, ith some doubt, places it at the end of his *Pteleaceæ*, and sks whether it may not rather be approached to *Dodonæa*.[*] r. A. de Jussieu, in his admirable memoir on the *Rutaceæ*, xcludes it from his *Xanthoxyleæ*, formed for the most part f the *Pteleaceæ* of Mr. Künth.[†] In the Prodromus, De andolle restores it to its position at the end of *Xanthoxyleæ*; ut in a subsequent note[‡] suggests that with *Suriana* and *eterodendron*, Desf., it may possibly form a distinct Order. r. Arnott describes the Order *Surianeæ*, composed of the ingle genus *Suriana*, which he places doubtfully between he *Crassulaceæ* and *Ficoideæ*, on account of its relation to *euradeæ*, and thence to *Rosaceæ* and *Geraniaceæ*, to which Künth and others had likened it. In fact it bears but little affinity to *Cneorum*; and not much more, as Mr. Arnott observes, to *Terebinthaceæ* in general.[‖] Dr. Lindley describes likewise the Order *Surianaceæ* from the single genus *Suriana*, to which he reluctantly appends *Cneorum* and *Heterodendron*, with the observation that the character of the Order must be altered if they are to be admitted into it.[§] Bartling had placed *Cneorum* amongst his *genera dubiæ sedis*. Finally, in his late immense and most useful undertaking, the *Genera Plantarum*, Professor Endlicher accords it with *Suriana*, a place not less doubtful at the foot of *Connaraceæ*, probably from its mbricate æstivation, and from his supposing that the embryo as unfurnished with a perisperm; but its position and that f the radicle in this Order is so different, that were there not ther notable distinctions, these alone would preclude any uch union. It appears to me that *Cneorum* is not less disnguished from *Heterodendron* than from *Suriana*. *Heteroendron* has its ovules fixed to the base of each cell; its stamens, in number indefinite, have exceedingly short filaments, inserted under the disk, and there are no petals. Other differences will probably be found when the fruit and the embryo shall have been observed; nor is it possible to class this genus with certainty till it has undergone farther examination.

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[*] Künth, Tereb. Ann. Hist. Nat., vol. ii. p. 357.

[†] A. de Juss. Mem. Rut. p. 41.

[‡] Prodr., vol. ii. p. 91.

[‖] Wight and Arn. Prodr. Flor. Pen. Ind., vol. i. p. 360.

[§] Lindl. Nat. Syst., Second edition, p. 142.

The group, therefore, of which I now treat, will be composed solely of the genus *Cneorum*, or, as I propose to call it, of the sub-order *Cneoreæ*, which cannot be appended easily to any known family, though I am inclined to think that it may be considered as a division of *Xanthoxyleæ*.

The *Cneoreæ* are extremely low, woody bushes, with very entire, lanceolate or linear, verticillately alternate leaves, glabrous, or covered with hairs affixed by the middle. Its flowers, placed on very short axillary pedicels, are solitary or in pauciflorous cymes, the pedicels being either free or consolidated with the footstalks of the leaves, so that the flowers appear to proceed from the leaves themselves.

These general appearances give to the *Cneoreæ* an air sufficiently distinct from the other Terebintinous Orders, from which, nevertheless, through the structure of their flowers, it is impossible to separate them. Yet, still more than any other *Terebinthaceæ*, they approach *Euphorbiaceæ* by the ternary or quaternary disposition of their parts, by the position of their ovaries, hanging as it were around a common axis, and by their ovules, solitary and suspended from the inner angle of the cell. In fact, they greatly resemble some *Crotons;* and to this may be added their simple leaves and their medical properties,which latter, in *C. pulverulentum*, come near to those of the Cascarilla bark, the produce of a *Croton*.

In respect to the position of their ovules, they agree with *Zygophylleæ* and with *Simarubeæ*, as well as in some other points, their fruit being divided into superposed cells, as in *Tribulus*, and their stamens inserted in the gynophore, as in *Guaiacum*, which they resemble by their properties and the extreme hardness of their wood; but the presence of a perisperm distinguishes them from the latter Order, and its nature nany other particulars, from the former. Through their ar hermaphrodite flowers, they have a similar affinity to *neæ*, amongst which we find the genus *Hortia*, with and stamens inserted on the disk, and *Agathosma*, with s suspended from the corner of the cell.

ey differ entirely from all other *Xanthoxyleæ*, through facies; in having simple, irregularly alternate leaves and ar hermaphrodite flowers; by the insertion of the sta- on the gynophore, by their ovules suspended from the r of the cells, by their convoluted embryo, which ibles some mollusca when drawn from their shells, by linear cotyledons and long radicle. In most other cts, particularly in being provided with a perisperm, they ible that Order; and even in regard to the position of the s, the singular genus *Vepris*, in which these organs are si- ly placed, forms for them a remarkable connecting link. ss therefore they receive any new addition, being now osed solely of two species, I am inclined to consider the *reæ* as a very distinct *Sub-order* of *Xanthoxyleæ*. If, Dr. Lindley, we class the *Euphorbiaceæ* amongst Poly- ous Orders, they will follow *Xanthoxyleæ*, and be con- d with them by this little group, which may be thus ed.

CNEOREÆ *Nob.*

ORES regulares, hermaphroditi. CALYX parvus, 3-4- tus, persistens. PETALA numero dentium calycinorum lia, elongata, suberecta, æstivatione imbricata, sub gyno- inserta, caduca. GYNOPHORUM columnare, 3-4-sul- b. STAMINA petalis breviora, atque iisdem numero lia, medio gynophoro inserta. FILAMENTA filiformia, ANTHERÆ 2-loculares, antrorsæ, longitrorsùm de- ntes. OVARIA 3-4, gynophoro insidentia, inter se per s et columnam axilem cohærentia. OVULA in quoque o solitaria, anatropa, angulo interno sub apice ovarii sus- a. STIGMATA carpidiorum numero æqualia, basi accreta

et in stylum brevem protracta. **Fructus**, drupæ 3 vel aut abortu pauciores, dorso gibbæ, circa axim centralem ve ticillatim suspensæ, epicarpio subcarnoso cum endocar osseo crassissimo coalito, 2-loculares, loculis superpositis, abortu 1-loculares. **Semina** solitaria, cochleata, è loc angulo superiore pendula. **Embryo** cylindraceus, curvat chlamyde perispermo carnoso ad hilum et chalazam cras dorso tenui involutus. **Cotyledones** lineares, crassi culæ. **Radicula** cotyledonibus sublongior, supera, h conversa.

Fruticuli parvi, pilis densis brevibus medio affixis vesti vel mox glabrescentes, cortice tenui, tenaci, ligno durissi lutescente, proprietate quâdam amarâ, vel aromatico-ama febrifugâ præditi, loca petrosa ad oras maris interni ma occidentalis et in insulis Fortunatis incolentes. Rami creb virgati, ascendentes, recti. **Folia** exstipulata, integerri lanceolata-spathulata, vel lineari-lanceolata, obtusa, coriac basi in petiolum brevem attenuata, epunctata vel ad margi rariusculè pellucido-punctata. **Flores** pallidè flavi, axilla solitarii, vel in cymulis paucifloris digesti, pedunculo comm cum folii petiolo connato, pedicellis sub flore articulatis.

BOTANICAL INFORMATION.

Extract of a Letter relating to the Botany of Chili.

Valparaiso, June 184

Many years have elapsed since I had the pleasure addressing you, and it is almost as long since I heard fr you, your last letter bearing date June 1835. My only rea for discontinuing our correspondence has been that I could attend to natural history, my time being wholly taken with agricultural pursuits, which, I am sorry to say, h been attended with little benefit to myself.

This year, however, I determined to undertake a jour with a view to collecting objects of natural history; and that purpose I made an excursion over the Andes by the

of the *Planchon*, in lat. 34° 35′, to the elevated vallies on the eastern side; and, I hope, ere this reaches you, that you will have been put in possession of the collections which I have made there.

Besides the plants from the Andes, I sent some duplicates from Valdivia, and others from the plains at the base of the Andes, province of Colchagua. Also a collection of *Mosses*, about 50 species, more or less; the greater part from Valdivia, and others from Colchagua. I regret to say that my time did not allow me to annex a catalogue, stating the locality of each species. The *Mosses*, I doubt not, will give you pleasure; indeed I consider this part of the Botany of Chili as having been much neglected by previous travellers.

The curious little parasite called *Pilostyles Berteroi*, of which there is a sketch in your letter, I never found near Valparaiso, though Bertero did, about 1830, when I enjoyed the society of that amiable and unfortunate botanist, and saw the plant among his collections. In my late excursion I had the good fortune to meet with this, or a nearly allied species of the same genus, for I must leave it to you to determine this point. As with Bertero's plant, so does mine confine itself to the genus *Adesmia*;* for I found it growing abundantly on the stems of a species of *Adesmia*, in a most beautiful valley, called *El Valle de las Cuevas*, about ten leagues to the east of the Volcano of Peteroa. It was only in this place I was fortunate enough to detect it, so that it must be considered a rare plant. I regret that for want of bottles and spirits I could not forward to you some preserved specimens; but I trust that the dried ones will enable you to make the necessary drawings.

In my last collection are a considerable number of the plants, first discovered by your friend Dr. Gillies; viz. the genera *Hexaptera*, *Viola*, and *Mutisia*. Among the *Compositæ* I trust that you may find some new plants. It is a singular fact, that on the elevated regions of the Andes, this Order forms nearly one-third of the whole vegetation.

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* Another species of this remarkable genus has been found by Mr. Gardner in the Province of Goyaz, Brazil, and equally parasitic on a leguminose plant, viz. an *Inga*, or a genus closely allied to it.

You will doubtless be pleased with my *Pozoa hydrocotylifolia* (marked 1,190 of the Catalogue); but I beg you will only adopt this name if previously unappropriated. I think it will be found worthy to figure in your Botanical works, as it is quite distinct in habitat and characters from the other species. It only grows in dry, stony, sandy places in the bed of the mountain-rivers on the eastern side; while *P. coriacea* inhabits rocky spots on the western slope of "*Los Impossibles*," at the verge of the snow.

Besides plants, I forwarded for sale a small set of *Birds* from the Andes. There were five sp. of *Fringilla*, some remarkable for the sweetness of their note; a most singular bird, allied to the genus *Anas*, having spurs on its wings, and which ascends the Rapids in a truly astonishing manner; also an elegant *Picus*, called by the natives "*Carpintero de la Cordillera*," and "*Concona*." Together with these, I sent a few *Coleopterous Insects* from the valleys of the Andes; and hope next year to obtain the rare *Chiosagnathus Grantii* from the south of Chili.

During my rambles over the Andes, aud while staying in the valleys, I kept a rough Journal, in which I entered my observations on the local distribution of vegetation, and some remarks on the movement of the thermometer; but a consciousness of my deficiences, together with natural timidity have hitherto hindered me from preparing it for the public eye, or even transmitting it home. Had I done so, it is probable that your kind aid would have brought it into a form worthy of one of the Journals: and it certainly contains many details, as to the habitats of interesting plants and birds, with much information both botanical and ornithological. I also brought down a few specimens of primitive rocks that might have pleased a geologist. My Journal would have shown somewhat of what the traveller has to endure, when spending a month at an elevation of from 10,000 to 12,000 feet. As to myself, I enjoyed perfect health, and only regretted that want of food, my stock of provisions being wholly exhausted, obliged me to quit the Andes.

In a few days I trust to leave Valparaiso for Copiapo, whence I shall make my way by land from the borders of the "Desert of Atacama" to Valparaiso, stopping some time at Huasco and Coquimbo. This journey will occupy at least five months, and my route will lie along the base of the Andes—a route perhaps untrodden by any Botanist. I therefore expect to return hither in October or November, with an interesting collection of dried plants, land-shells, birds, insects, metals, and minerals. By the accomplishment of this journey I trust to complete my collection of the plants of Chili, and to possess myself of the finest herbarium ever composed of the vegetation of this country. It is my intention to write to you from Copiapo, and report progress.

As it is probable that my whole attention will in future be turned to Natural History, so I entreat you to favour me by obtaining commissions from your numerous friends. I mean to study particularly the beautiful genus *Chlorœa*, one species of which has been lately figured in the "Botanist." These plants, when introduced into England, will prove, I am sure, great favourites; being easy of cultivation, and only requiring to be kept without water for several months after flowering, so as to imitate the dry season, and enable their tubers to ripen. I am now acquainted with about twenty species, and have sent home a quantity of the roots of six species, and also some *Cacti*.

It gave me much gratification to see your *Lobelia Bridgesii* lately figured in the *Botanical Magazine*. The drawing is most faithfully executed; and I am confident that this fine plant would well bear the climate of England, if placed under a south-wall, and well covered up with manure during winter. It is herbaceous in its native state, as is *Lobelia Tupa*, found in the same place. Allow me to correct an error in the habitat, which is *Castillo de Amargos*, not "Castello de Amorgos."

Among the species from the Province of Colchagua, you will find a most beautiful *Tropæolum* with yellow flowers, which I consider new. Tubers of it are among my bulbs and seeds. I have called it *T. edulis*, because the roots are eaten either roasted or boiled, in times of scarcity, by the poor natives of the Province of Colchagua, who call it "*Papas Cudas.*"

I shall endeavour, next year, to transmit home tubers of *Tropæolum azureum* of Miers; a most charming plant, which few persons have ever seen. I once found it producing its lovely blue flowers on the summit of a mountain called "La Campana de Quillota," nearly 4,000 feet above the level of the sea, and no where, save on this mountain, did I see it, during my rambles in Chili.—[All the plants mentioned above have arrived.—Ed.]

Coquimbo, Nov. 20, 1841.

Before leaving Valparaiso, I had the honour of writing and communicating my intended excursion to the north of Chili, for the purpose of collecting plants. I reached Copiapo about the end of June, and have since been occupied in exploring the Departments of Copiapo, Balenar, and Trierina, having arrived in this place but a few days ago. I performed my journey by land across the sandy desert that lies between Copiapo and Huasco, and thence made my way hither (to Coquimbo) along the coast.

I am most happy to inform you, that I have amassed a highly interesting collection of dried plants: the number is not so great as I had anticipated, but there are many novel and interesting species among them. During my progress I found no less than seven distinct kinds of *Heliotropium*, and as many of *Nolana*; several *Adesmiæ*, and a beautiful, new white-flowered *Schizanthus*. There are also several species of *Cristaria*, three of *Tetragonia*, and a most lovely plant, called by Bertero, if I do not mistake, *Tecophilæa*, but distinct from the species of that genus which he found near Valparaiso; also a charming new *Mathewsia*, and many things belonging to genera with which I am unacquainted. This collection, though not so large as what I transmitted to you from

Valdivia some years ago, will prove, I trust, yet more acceptable, and afford materials sufficient to form an article in your *Botanical Journal*.

In a few days I intend to leave Coquimbo, and ascend the valley of "*Elque*," to the verge of the snow; and there it is probable I may add many interesting plants to my collection. Vegetation now wears a burnt-up appearance along the coast, Spring being of brief duration in these warm latitudes, so that it is necessary to pursue my botanical researches on the elevated mountains of the Andes. After my return to Coquimbo from the Cordillera, I shall then take the road for Valparaiso, passing through Andacolla, Illapel, and Petorea; thence, descending the valley of Aconcagua, and going through Quillota, I shall reach, I expect, Valparaiso about the 15th or 20th of January. Immediately after my arrival, I intend to form the various collections for yourself and others, which you may therefore look for about April or May.

Hoping to hear from you when I get to Valparaiso, whence I shall have the honour of writing to you, I am, &c.

THOMAS BRIDGES.

Biographical Sketch of the late ALLAN CUNNINGHAM, ESQ. F.L.S. M.R.G.S. &c. &c. *by* ROBERT HEWARD, ESQ. F.L.S.

(*Continued from p.* 128.)

Of the homeward bound passage Mr. Cunningham thus writes to a friend in Sydney:—"After a voyage of twenty weeks from Port Jackson, we last night (July 9th), made the Scilly Isles, off the Land's End, and this morning (10th), when off the Lizard Point, running up the coast, were boarded by an Isle of Wight pilot, who among other local news, told us that a convict ship was daily expected at Portsmouth to receive her prisoners for the Colony. I therefore, sit down, while we are running up channel before the breeze, to give you a few brief lines, although really I have as yet not much to say to you,

but I wish to show you an example, having the pro
before me of an opportunity (and it may be an early one,
to transmit it to you. You may recollect, I joined m
low passengers aboard the Forth, on the 17th Feb.
although we dropped down to the Heads, it was not
Sunday, the 20th, that the wind allowed us to put to
By sunset we had made a considerable stretch out t
eastward, the wind having continued from the northwa
moderate breezes; at night it became exceedingly light,
the lower stratum of clouds or scud, being observed to
over us from the southward and westward a change of
appeared indicated. On the morning of Monday, the
we encountered a smart squall from the S.W. accomp
by hail and heavy rain, which obliged us to shorten
During the day, we made some progress to the east
under reefed topsails, the wind having veered more t
south against us. After encountering a variety of wea
occasionally fair, but more frequently squally with d
fogs, we passed the South Cape of New Zealand, on
eighteenth day at sea, in about mid-channel between
headland and the Auckland group, and therefore in sig
neither.

On the 13th of March we passed the meridian, and I
more entered the western hemisphere; and in orde
accommodate our reckoning (having gained a day), we
ourselves back one. The winds now hung much to
northward, and our passage easterly, towards the *Horn,*
protracted to our fifty-third day at sea, April 14th, whe
passed that celebrated and somewhat notorious Cape.
sea was calm, and the sky beautiful, with Staten La
sight, twelve leagues to the north, looking even green.
was to all of us a long and tedious run, and, moreover
usually monotonous, for we saw but few birds, and th
had a uniformly heavy swell. As we approached the
we had frequent squalls of snow, hail, and sleet; and at
periods, and particularly when a southerly wind blew, w
it did sometimes so hard as to amount to a violent gal

all felt the cold exceedingly keen and penetrating. It appeared as if it had come directly upon us from the very bosom of some stupendous iceberg in the vicinity, for I could not, without serious inconvenience, show my face to it, accustomed as I have been for years past to the temperature of a mild Australian winter, and the fervour of a northwester, furnace-breathing blast, in its opposite or summer season. The thermometer, on such occasions, fell below the freezing point. Most of us had chilblains in the incipient stage, either on our hands or feet; which, however, soon disappeared, causing no further inconvenience, so soon as we had doubled the great southern promontory, and had pushed our way to a more mild and genial clime. On the 20th of May, after looking for eighty-nine days upon the surface of a circle of ocean, (the *rim* of which we used daily to trace, to catch any object that might exist within the range of vision), with only here and there an albatross, or a few of the procellaria-kind of sea fowls, to skim along before the gale, to relieve the monotony of the aqueous scene, it may readily be conceived with what interest the report on deck of '*a sail in sight*' was received by us; one and all ran out of the cabin, to witness the novel scene.

The stranger, who was to windward of us, was a brig, with her head to the southward; and as we could not approach her as the wind then was, and she showing no disposition to bear down towards us, we did not communicate. On the 27th, our ninety-sixth day out, we crossed the line, in long. 26° W. without being detained by those calms to which ships either outward or homeward bound, are oftentimes subjected at that stage of their voyage. On the 9th of June we were on the northern tropic, when a large vessel was seen ahead, from the topsail yard. Being immediately under the sun (one's shadow was *dumpy*, equal on all sides), we had, in consequence of the rarefaction of the atmosphere during the day, light airs, so that two days elapsed before we were able to come up with her, (we being evidently the better sailer), when we were most agreeably surprised to find her the Royal Admiral, who had left Port Jackson four days after we had sailed. The weather was very favourable for our communication, and Captain Fotheringham, the commander, came on board, with a budget of rare English news, to the 31st of March last, which he had received from an outward-bound Indiaman, met with on the south side of the equator. The Royal Admiral had made better weather of it than we had, easterly to Cape Horn, which she doubled in something more than six weeks; her passage having been not a little diversified by seeing Campbell's Island, the land of Cape Horn, and by having fallen in with many icebergs, in lat. 59° S. the summits of some of which were estimated at six hundred feet above the sea; afterwards, however, she was much becalmed, and thus it was we were enabled to come up with her. Light winds kept us together several days, and visits were occasionally paid to and from both vessels; at length, however, a breeze sprung up, to which we set every stitch of canvas that would draw, and soon taking the lead, we left our consort far behind, and have not seen her since. Some two or three days afterwards, we fell in with a brig, the Three Sisters, from Bahia to Guernsey, laden with sugar. From her captain and one of her passengers, whom we invited on board, we received a long account of the revolution that had taken place in Brazil, and of the abdication of Don Pedro. Nothing worthy of mention occupied our attention after we lost sight of the Three Sisters, until two days ago, when we passed a French brig, very heavily laden, and as we gave her the go-by, we simply exchanged each other's longitude, by chalking it on boards; ours by chronometer, was 12° W, and the Frenchman's, by dead reckoning, 11° W. I have now told you all about ou voyage;—two or three words, then, about ourselves. I have been so much on shipboard, and long since seen the necessity of studying to be on good terms with all persons one might be doubled up with in a voyage, that in this I laid mysel out more particularly, on account of its length, to please and be pleased, as far as in me lay.* It was fortunate that we were all more or less acquainted with each other before we joined mess; as, in consequence, we the sooner settled ourselves down, each in his or her particular seat, and almost immediately grouped together at table, as a family whose members had known and associated together for years. Each not only met, but oftentimes anticipated the wishes of the other. These feelings, these excellent dispositions, which I found manifested among us at the very commencement of our voyage, were cherished by all during its tardy progress, and at this moment that I am writing, just at its close, are as alive as ever; so that many a dull, depressed period, in the higher freezing latitudes, when we were sadly bandied about by the angry elements, before we got round the *Horn*, and when by reason of the violent motion of our bark, and the great chill, one felt no disposition to write, was passed away in discussions on varied subjects, or recitals from favourite authors."

Mr. Cunningham reached London about the middle of the month (July), after an absence of nearly seventeen years from his native country. His state of health, at the period of his landing, was far from good; he suffered exceedingly from indigestion, the result, doubtless, of the very indifferent food he had been compelled to subsist on for some years previously, when on his various exploratory expeditions; and he was also much afflicted with rheumatism, in a very severe form, occasionally suffering much from acute pain, and at all times a serious inconvenience to his active habits. He took up his residence at Strand-on-the-Green, on the north bank of the Thames, at a short distance from the Royal Botanic Garden, at Kew, for which he had catered with so much industry and zeal, since 1815. There are many who will long remember the pretty cottage he inhabited, equally the hospitable host, who on all occasions was so rea diffuse around him the rich store of information he sessed, as well as to distribute among the naturalist botanists who visited him a portion of the valuable colle he had brought home. His time was much employ arranging his large herbarium, the results of seventeen labour, and in giving to the world, through the medi the botanical periodicals of the day, a portion of his ob tions on the botany of the countries he had visited. graphical details of those parts of New South Wales t had investigated in his various expeditions, were als lished in the Journal of the Royal Geographical Soci also were some geological remarks, in the Proceedings Geological Society.

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* A scrap of advice well worthy the attention of "those who go down to the sea in ships;" for an inattention to that golden rule has caused many a voyage to be a term of misery and annoyance, that otherwise might have been one of pleasure and happiness.

In 1832, in consequence of the death of the indefat Mr. Charles Fraser, the situation of Colonial Botan New South Wales, became vacant, and an offer of the tion was made to Mr. Cunningham, which he decli favour of his brother Richard; who, bearing a strong mendation from Mr. Brown, received the appointmen the Colonial Office. He reached Sydney in February, and as has been previously mentioned, in April, 1835 sacrifice to science. His disastrous and painfully c stanced death, was a source of intense grief to his b Allan, who now had lost all his near relatives; and th sequence was an entire change in his future desti Although for some months in possession of the report brother's death, he still clung to the hope that he wa and probably detained among the natives, and that he be restored if a party were sent in search of him. Ho on the 17th of May, 1836, the writer of this sketch r the affecting letter below, confirmatory of his worst fea

* "My very dear friend Heward,

"I have the painful task to inform you, in common with othe poor lamented brother's best, very best friends, that Richard C ham is no more. Up to the hour of my having written to you, th previous to his embarkation, were principally em-

kfast, I had secretly cherished in my bosom a hope that still he that it only required a diligent search in the Bogan country for at detained him, to rescue him from their grasp and restore lized society, and to the duties of his appointment. All hope, now lost—the slender thread by which the little cherished ttached to the best feelings of my nature, has just been severed ly communication I have received from Downing Street, from a in the New South Wales division of the Colonial Department, me that despatches had been received from Sir R. Bourke, con- of my poor brother's death. His Excellency's report has been e in these words, dated 30th Nov. 1835.

ave now to inform your Lordship (Lord Glenelg), with great t I have ascertained, by means of a party sent out to search for ngham, that he was murdered by the blacks (natives), soon paration from his companions. The circumstances of the case een yet officially reported to me, but shall be communicated as ceived.

(Signed) Richard Bourke.'

rother, it seems therefore, was deprived of life about the third pril, 1835; proving clearly to me, that those natives had been greatly irritated by white men, convict stock-men, most pro- have again the wide world before me, but of my final move- all let you know in a few days.

Believe me, my dear Heward,

ployed in preparing for the press his Observations on the Botany of New Zealand, published in the Companion to the Botanical Magazine and the Annals of Natural History, entitled, *Floræ Insularum Novæ Zelandiæ Precursor;* and in distributing, among the botanists of this country and the continent, the duplicate specimens of his extensive and valuable herbarium.

He engaged his passage to Sydney on board the (male) convict ship, Norfolk, Captain Gatenby, and joined that vessel at Spithead, the latter end of October, anticipating a quick passage, and as full of enthusiasm as when he left the same port, two-and-twenty years before. In a letter, dated Spithead, the 28th of October, he says:—"Here we are, still, and likely to continue at anchor another day; for although the captain reached us from town last night, he brought down with him *no orders* for sailing from the Transport department, which it appears are necessary to be received, ere we dare, so to speak, to lift the anchor. Moreover, the wind has been, hitherto, more or less adverse for getting down channel; but, as saith the adage, ''Tis indeed an ill wind that blows nobody good!' This prolonged stay has afforded me time to overhaul my cabin baggage, which is so considerable, as you yourself saw; to stow all properly, and cleat and lash all my boxes, trunks, and packages sufficiently for sea, all which being now absolutely effected, I find I have as much room as I want to turn about in, and lift the leaf of my very convenient table, at which I hope to write and read much during the passage, which, Capt. Gatenby declares in positive terms, shall not exceed a hundred days! Regarding my messmates, I may, I think, say with great truth that I have, since Monday last, seen enough of them all to justify the anticipation of a very agreeable cabin passage, out to that

country on the Bogan River, fell into the hands of one of the native tribes, by whom he was unfortunately killed, about the 25th of April, 1835, in the 42nd year of his age.

"This tablet is erected as a lasting and affectionate tribute to his memory, by Allan, his only brother."

l of blue sky and sunshine, where I hope to employ a nd series of years in the advance of botanical and other nce, and from which you shall hear often from me. uld we touch at any port in our voyage, I will contrive to something to you. It is, however, not at all likely that hall visit any place so desirable and so devoutly wished y the officers (Captain Bowler and Lieut. Raitt, 80th commanding the convict guard) and their ladies, but l expedite our passage as quickly as possible, as we shall lutely be in want of nothing; having on board an abun- stock of fowls, ducks, geese, sheep, pigs, an Alderney , that gives a good supply of milk daily, and the Tank- el is now alongside, ready to pump in as much fresh r as we can carry. I hope to be not above a month in t Jackson ere I shall have the gratification of hearing a you. I am in real good health at this present writing, do not calculate on any sea-sickness, whatever weather may encounter, before we reach a warmer, more rational ate than the present. It is said here that a severe win- is to be apprehended, because of the presence of certain thern birds in this neighbourhood. If it should prove so, all escape its severe chills, for by Christmas day, I ex- t to be to the eastward of the Cape of Good Hope; and ough, perhaps, occasionally in a trough of the sea, with a '*Sou'-wester*,' to urge us through it, nevertheless not af- ed by any rigorously low temperature. My plants look ex- lingly well in the Wardian cabins, which appear as if they been measured for the only snug spot I know of in the , out of harm's way, namely on the poop, under the ker-boom, and abaft the binnacle. Several daisies, aroses, &c. are now gaily in flower, and all are very ver- t and vigorous. To yourself I say, with great truth, I estly wish every good fortune may attend you. Adieu, may God Almighty prosper you, is the hope of your sin- friend, Allan Cunningham."

Totwithstanding the excellent spirits with which Mr. nningham embarked for a second time to Australia, his accepting the post of Colonial Botanist was far meeting the wishes of his more intimate and an friends, who, with a better (as it unhappily ultin proved) knowledge of his somewhat debilitated constit were most apprehensive for the results of his again exp himself to the labours of exploratory expeditions, eit the dry, heated atmosphere of New South Wales, o more humid, frequently varying climate of New Zea from both of which he even after a residence in Engl upwards of four years, at times suffered severely. ever, the desire to carry out further the botanical disco of his unfortunate brother in New Zealand, and his thusiasm for scientific research, rendered him deaf to wishes and apprehensions of his friends, and he resolutel forward for another sojourn in the Southern Hemispher

The Norfolk sailed from Spithead on Sunday mo the 30th of October, and reached Port Jackson, on Su the 12th of February, 1837. The following extract Mr. Cunningham's first letter gives a most interesting of his voyage.

> "I pity the man who can travel from Dan to
> Beersheba and say all is barren."
>
> STERNE.

"Our 104th day at sea,
eastern side of Bass' Straits
Horn bearing N.N.E. 70 m
"Convict Transport, Norfol
Feb. 1837."

"My dear Heward,

"As we have, at length, got a fine steady wi W.S.W., after having been four days little other tha calmed at, and to the south-west of, our present positior as we have now every chance of entering the Port, to all of us, honest and *otherwise*, are destined, I com this, my first communication to you in the Southern sphere, with no ordinary pleasure, to tell you someth our voyage, although really the incidents are in themselves few and meagre; for in a run out, as ours has been, without touching at any port, to look at the complexion of the natives, eat their fruits, and take a peep into their back country —one has not wherewithal to talk of; since, having been already at sea a little bit in my life, I can't write of whales, grampus, sharks, porpoises, bonitos, or flying-fish, nor of the dying dolphin, whose beauteous tints of skin a matter of a dozen or more poets have brilliantly sung. However, agreeing as I really do, with Yorick, in the above-cited expression of pity, I must say a few words to you of the vasty deep, of the things it doth inherit, and of ourselves—messmates, all of whom you saw on board, at Spithead.

"We went to sea on Sunday, the 30th of October last, and during the first ten days, encountered much bad weather in crossing the Bay, with heavy seas and adverse (south westerly) winds. Moderating, however, we sighted Madeira, on Sunday, Nov. 13th, which beautiful, very elevated island, we passed on its western side. After a run of 1080 miles to the S.S.W., we made San Antonio, one of the Cape de Verd islands, on the following Sunday, Nov. 20th, and a most agreeable day we had of it; for the bland climate, with lots of sunshine and blue sky, and the pleasant look the island afforded us at eight miles off shore, did indeed remind me of some of the happiest days of my life, in other countries, and latitudes of this Southern Hemisphere, in which you know I have had a seventeen years' wandering; and to all this was superadded the pleasure we derived from a visit made to us by the surgeon and chief officer of the Columbo, an Indiaman, bound to the Cape and Singapore, with which fine ship we came up on that sunny Sunday. The fourth Sunday found us within 3½ degrees of the equator, which we crossed on the 29th, in 2° 6′ west long. During the four following weeks, we averaged 1,000 miles between Sunday and Sunday, although we ran so far to the westward, by winds from the opposite point, as to be close on the Brazil coast before we crossed the southern tropic. Reaching the parallel of 35° S.

we doubled the Cape on the 1st of January, 1837, (Sunda again), and were favoured with more steady winds to enab us to run down 132 degrees of eastern longitude, we now fe in with the common, or white albatross (*Diomedea exulans* several *Procellariæ* (cape-pigeons among them), of the South ern Seas, and two Terns (*Sterna alba*, and another). It wa the intention of our excellent commander, Captain Gatenb to touch at Tristan da Cunha in passing, to have seen G vernor Glass, as the person there residing is called, and have procured from him some fresh vegetables and frui which, report says, he furnishes to passing vessels with som degree of liberality. But the winds did not favour us; w therefore passed it full a degree to the northward. Onwa we urged our voyage easterly, making capital runs weekly 1100 to 1200 miles; so that on Sunday, the 29th of Januar we passed the longitude of Cape Leuwin (115° E.).

On the 6th of February we passed Bass' Strait under ea canvas and a steady westerly breeze, but we had scarce cleared the islands, and got a degree or so to the eastward, th we had to haul our wind and reduce our canvas to a reef fore and main topsail; the wind after traversing the wh compass set dead foul against us at N.E. Thus were we two days dodging between the continent and Van Dieme Land, or being becalmed, doing worse than nothing as regar wear and tear. But it's all right now; we've open sea-roo fifty fathom of water under us, a steady eight-knot bree and right pleasant countenances, each of us in full expec tion of seeing old friends with older faces on shore on Su day. Thus much for our run out.—At length after a fifte weeks' run, from Sunday, 30th October, to Sunday, 12 February, we dropped into our port in company with a lar convict-ship, the British Sovereign, (a month longer at s than us), and the Fairlie from Van Diemen's Land, where s had landed Sir John Franklin and suite. We reached Sydn Cove at three, P. M., and a sunny roasting afternoon it wa (I think I never perspired more profusely in my life), wh I landed and walked quietly to a friend's house to deliv my letters, where I met a batch of old acquaintances, and learnt all the news of the shore. On Monday I announced myself at Government House, and had an audience of a quarter of an hour with Sir R. Bourke. 'He was glad,' he said, 'to see me; having read much, and heard more about me.' He had been looking for me during the last two months, and hoped I should get on shore, and enter on my duties immediately. Regarding the state of the garden, I have to say that Anderson, the Assistant Superintendent, has been very active; and I have been working the Government about my cottage in the garden, which is in a sadly dilapidated state. I am in hopes His Excellency will allow me to rent a cottage for so long a time as may elapse between this period and the completion of such repairs and alterations as are necessary. I saw a house (a verandahed cottage) this day, which I have partly taken, the rent is extremely high, 90*l.* per annum, but it is just the thing I want for size, with a splendid aquatic view before me of the port and shipping, and about 150 feet above the lower part of the town. My two cabins of plants from Loddiges' were landed in fine condition, and I am gradually adapting them to the high dry temperature of the colony at this season. The heat I find excessive, because I have not felt what I do now these six years, yet the thermometer has not a higher range than 85° in the shade." * * * * *

Mr. Cunningham commenced the duties of his office with the same zeal and activity that had always distinguished his labours in the colony, and great improvements were projected by him for the benefit of the Botanic Garden in particular; but he very soon discovered that various and onerous services were expected from him, that had but little to do with the presumed duties of "Colonial Botanist, and Superintendent of the Botanic Garden," for so runs his style and title in the New South Wales Government Gazette of March 1st, 1837, which announces his appointment. For besides the varied duties of attending to a botanic garden—corresponding with other colonial establishments of a similar nature, for the mutual benefit of both, by inducing an interchange of their various productions—undertaking journeys for the purpose of collecting botanical rarities indigenous to Australia, &c., the situation of landscape-gardener and layer-out of plantations and promenades for the benefit of the good people of Sydney, was also, among other equally anomalous duties, considered by the Colonial Government to be part and parcel of the office of Colonial Botanist; and in consequence thereof, no fewer than one hundred convict labourers were placed under the charge and supervision of the Colonial Botanist, and as an agreeable addition to the presumed quietude of a garden devoted solely to scientific pursuits and researches, a barrack for the permanent residence of forty of these incorrigibles was ordered to be immediately built in the Botanic Garden, and the Superintendent of it was to be held responsible for the well-doing of this new feature in a botanical establishment.

Mr. Cunningham was consequently soon made aware that, as a botanist, his services were likely to be but of little avail to his correspondents in Europe, or to science generally; added to this was the great indisposition on the part of the Colonial Government to meet his wishes, either in the providing a suitable habitation for him in the garden, or of affording him, in any way, an opportunity of carrying out the real duties of his situation, namely, that of Colonial Botanist, by acceding to his numerous applications for the assistance of additional horses and servants, for short tours for botanical investigation of different portions of the colony. Another unpleasant affair was the circumstance of the produce of the garden (fruit and vegetables), being grown to a large extent for the benefit of certain official personages, which had become so notorious, that the Sydney press took notice of it in no very measured terms. The result of all these annoyances was Mr. Cunningham's determination to resign the appointment of (the miscalled) Colonial Botanist; and in the early part of December he sent in his resignation to the Governor, Sir R. Bourke, which was accepted by His

Excellency a short time before he took his departure from the colony. Previous to the arrival of Sir George Gipps, the new Governor, application was made to Mr. Cunningham by the Lieutenant-Governor, Colonel Snodgrass, that he would prepare and furnish a report of the state of the garden, and of the convicts that were employed on it, to lay before the expected Governor on his arrival. This request Mr. Cunningham complied with; and with it closed his connexion with the Botanic Garden at Sydney.[*]

It is much to be regretted that Mr. Cunningham, contrary to the wishes of many of his friends, ever accepted the situation of Colonial Botanist; for when he left England in October, 1836, he had not the most remote idea of many of the duties he was called upon to perform, as, for instance, the superintendence of convicts, and the raising of vegetables and fruit, &c. (a rather novel service for a practical botanist); consequently the harass and annoyance he suffered at finding himself called upon to fulfil duties of a most disagreeable nature, preyed considerably on his mind; and, in addition to this, his constitution was too debilitated to withstand unscathed the dry scorching breezes of New South Wales, which, at the period of his resignation, swept over Sydney from the north-west a perfect furnace-blast, the thermometer at times being 95°. These, together, eventually produced indisposition, of which he writes—"The result has been general debility, a

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[*] The following extract from the Sydney Herald, Jan. 29, 1838, is one of many remarks made at the time on the state of the Garden:—"The Botanical, *alias* the Kitchen Garden.—We have had frequently to call the attention of the Colonists to the fact, that a kitchen-garden, under the pretence of being a Botanic Garden, is supported in Sydney at an expense of from 800*l*. to 1,000*l* a-year. . . . . We scarcely ever walk through this garden without seeing some servant, with a basket, carrying off vegetables or fruit for Mrs. This, or Mrs. That—the wife of some official. Can't these people go to market and purchase their supplies as independent persons do, instead of poaching on what is really public property? . . . . Seriously, we do say, that such an impudent job ought to be done away with. It is, in fact, so barefaced, that Mr. Cunningham would no longer consent to remain a mere cultivator of official cabbages and turneps, and accordingly he has resigned the management of the Botanic Garden in disgust."

very weak stomach, no appetite, bad digestion, and gre
lassitude. But I am now living in good spirits, and in mos
pleasurable anticipations of what I hope to do in New Zea
land, and for my visit to those lovely islands of the Anthro
pophagi. I am in the midst of my preparations, hopin
to get away early next month. Of the presents, and article
to pay my way, you can form an idea by the following list:—
Thirty pairs of blankets, half a hundred weight of tobacco
pipes for smoking, (long ones for the chiefs), lucifers, gun
powder, fish-hooks, red woollen-shirts, red caps, linen-shirts
needles, pins, chisels, hatchets, and some other ironwork
Tell all that I have discharged the Government cabbage
garden in disgust, and am now about to enter with all my
might, mental and corporeal, on a more legitimate occupa
tion for a few months.—15th January, 1838."

Mr. Cunningham delayed his departure until Sir George
Gipps should arrive, which he did on the 23d of February
On the following day a levee was held at the Government
House, which Mr. Cunningham attended, and on the follow
ing day he received a letter from the Governor's Private Se
cretary, requesting him to wait on His Excellency at his ear
liest convenience. Mr. Cunningham called the next day
when he had a long interview with Sir G. Gipps, and an ar
rangement was made to meet the following morning at sever
o'clock, in the Botanic Garden. Mr. Cunningham goe
on to say—"I then took my leave, and next morning,
half-past six, was in attendance at Government House, an
found His Excellency ready to walk with me to the Botan
Garden. He asked me many questions regarding it, and e
pressed himself desirous of improving, provided the co
would be sanctioned by the Council. I pointed out in wh
way a botanic garden could be established in the colony, to
the depository of every species of useful and ornamental tree
shrub of the numerous islands around us in these seas, th
within it might be grown (or at least the attempt made at acc
matization), the numerous fruits of India and South Americ
of the coasts of Africa, of Madagascar, &c., &c., but that t

Director or Superintendent (call him what you like), should be a sound, practical, working botanist, who had industry to maintain a correspondence with all those places, and authority and discretionary liberty given to him to present individuals resident in those places such plants or seeds of his garden as would induce them to correspond with him, and send him of their particular riches, and thus, by such interchanges, a reciprocal advantage would be effected. I condemned the present garden, as being a mere shallow sand, resting on the shelving sandstone rock, which in some places (in the new or lower garden), pierced the surface, and in every part of the other divisions of the garden, was only from three to five feet beneath it; that, in consequence, it was utterly impossible for exotics, which rose to large shrubs or trees, to exist in the garden above a few years, for that as soon as the tap-roots reached the rock (one and all had shown it in their leaves), ill health followed, and death eventually—witness the few now alive that had been introduced by the late indefatigable Mr. Fraser from Brazil, India, Ceylon, Mauritius, the Cape, &c., and that were in great vigour in 1831, when I embarked for England. These few are now in a doubtful state, and the fine tree of *Ficus elastica*, which has shown decided symptoms of decay from the above cause, is now, since my return, dead to the ground. Moreover, I pointed out the badly watered condition of the whole, saving after great rains (a rare circumstance), and intimated that a good site for such an establishment might be selected two miles from the beach, among what has been called the 'Botany Bay swamps,' where all our best vegetables for the Sydney market are grown. "But," added I, "if her Majesty's Government care not for a scientific institution here, then the present spot may be maintained as a morning and evening public promenade, and as a vinery and vegetable-ground for the Governor's table." A short time subsequent to this, Mr. Cunningham received an intimation that it was the wish of Sir G. Gipps that he should remain some few years longer in the colony, and a request that he would lay before the Garden

Committee a proposition to the above effect. In consequence of this intimation, the following was submitted for Hi Excellency's consideration :—" I am willing to accept (for a period), an appointment of Government Botanist in this colony, having the command of every means that I myself may point out, as necessary to enable me and a small party to travel, either inland or to the coast districts, on tours of botanical research, at any period of the year best suited to the objects I may have in view. But I beg clearly and explicitly to state, that I trust my holding such a travelling appointment will never connect me again with the Botanic Garden, from all the various duties of which I have permanently retired, with the exception of that of being instrumental in introducing desirable exotics, and the scarce indigenous plants, to the care and culture of Mr. Anderson, the principal Superintendent; on whom has now devolved the duties of directing the labour of the garden and vicinity, the management of the forty felon labourers assigned to the establishment, and the conducting of every description o *local* correspondence—all *foreign* I shall have a happiness an willingness to be engaged in, as being immediately connecte with that mutually desirable interchange of plants and seed which I have already established with Dr. Wallich of Calcutta, and others, for reciprocal advantage. I should als be disposed, if I have health, to undertake further explorati excursions, especially on the west, and north-west, from th shores of Moreton Bay, with a view towards acquiring som knowledge of the physical character, the vegetation and general capabilities for pastoral purposes of that vast region interior wholly untrodden by white men, absolutely at th day a *terra incognita*, stretching from the parallel of 28° S., i which latitude I left off in 1827, towards the great inte tropical interior. With regard to the amount of salary which I may be entitled for any such services as proposed, would briefly say, that I trust it will be considered what have been in this colony, (holding a Treasury appointmen and that the notorious fact, well known to the Committee, may be also weighed, of my having received no reward or remuneratoin, in land or otherwise (thanks excepted), for the several long and fatiguing explorative journeys undertaken by me between the years 1822 to 1829, of all which the local Government was furnished with detailed reports. I urge, further, that with these circumstances in view, and added to the facts of the high rate at which house-rent has now attained, and also the increased price of every article of life in the colony, I trust that the Committee will be of opinion that a clear salary of 450*l.* per annum, exclusive of my expenses, or means of travelling, will not be deemed other than a fair and equitable pay, comparing it, and the appointment altogether, with the salaries and required duties of other Civil servants.

“ ALLAN CUNNINGHAM.”

"March, 1838."

The above, with a letter from the Garden Committee, strongly recommendatory of Mr. Cunningham's proposition, was laid before the Governor; to which his Excellency replied, in substance, as follows:—That he had taken into consideration the proposition, and given every attention to the letter that accompanied it; but he regretted, that, although the sum of 450*l.* per annum as a salary was not to be objected to, viewing the present demand for house-rent, the price of every article of life, &c., yet the equipment increasing it in the first year to 900*l.*, he could not recommend the appointment to the legislature of the colony; but, added his Excellency, “ If any member of the Council will propose it, and be supported by a majority, he would be happy to afford it his cordial approval.”

On the receipt of this communication, Mr. Cunningham made immediate preparation for embarking for New Zealand, and, although writing at the time in excellent spirits, it is evident that the germ of that disorder which eventually proved fatal had taken firm hold of his system. He says, “ Meanwhile I stand in my original position to return to Old England in 1839, for I want *rest*, permanent *rest*, having beer legs since 1814. Let others go and wander to advance four and twenty years, and endeavour to do and act ur assumed awe of Viceroys, Governors, underlings high i and Commandants in supreme command at penal stati say, let the botanical adventurer set forth with all t his teeth, and let him do and act far better, wiser, ar gether more effectually endeavour to advance botai poor I have been able to do."

It had been Mr. Cunningham's intention to hav advantage of the kindness of Capt. Bethune, of H Conway, of 28 guns, who offered him a passage t Zealand, *viâ* Van Diemen's Land, whither he was g convey the Bishop of Australia, who was then inten visit that portion of his diocese; but, in consequence doubts arising as to the possibility of the Conway bei to touch at New Zealand, Mr. Cunningham transhipp baggage from that vessel to the French corvette, of 3 L'Héroine, whose commander, Capt. Cecille, had in friendly manner proffered him a passage to New direct. They sailed from Port Jackson on the April, and on the 28th brought to off Paihia, Islands, " After," Mr. Cunningham writes, " th agreeable fourteen days' voyage I ever made in n Capt. Cecille studied greatly my comfort, not sin my mess with him, but on all other occasions. M. is an old officer; he entered the service in 1800, and much in the wars under Napoleon, having been in actions in ships of the line, when young, as *ense vaisseau*. The other officers were gentlemanly fine who vied with each other in paying attention to their *compagnon de voyage*. Now, with all the attention tl paid to me, I could not step on shore with my without a deep impression of a weight of obligation in of Capt. Cecille; and therefore you may imagine that not a little rejoiced to find Capt. C. proposing an ex up one of the rivers that run into the bay, to cut tim *specimens*, which I begged to join, to render my services and his party by gathering branches of each tree, and having prepared them as specimens, to give their names, with numbers corresponding with those of the blocks of timber, for his government. This I did in duplicate, and very much to the satisfaction of Capt. Cecille. We were absent three days up the Wycaddie river, having three boats with us and twenty-six seamen, to fell trees under the direction of the ship's carpenter. They were as follows:—

1. *Knightia excelsa*, R. Br. (in fruit.)
2. *Leiospermum racemosum*, D. Don.
3. *Myrtus bullata*, Sol.
4. *Cyathea dealbata*, Sw.
5. *Metrosideros robusta*, A. Cunn.
6. *Hartighsia spectabilis*, A. Juss.
7. *Dacrydium cupressinum*, Sol.
8. *Dracophyllum latifolium*, A. Cunn.
9. *Vitex littoralis*, A. Cunn.[*]
10. *Drimys axillaris*, Forst.[†]
11. *Podocarpus Totarra*, D. Don.
12. *P. ferruginea*, D. Don.
13. *Phyllocladus trichomanoides*, D. Don.
14. *Piper excelsum*, Forst.
15. *Dacrydium excelsum*, D. Don.
16. *Laurus Taraira*, A. Cunn.
17. *Laurelia Novæ Zelandiæ*, R. Cunn. MSS.
18. *Metrosideros tomentosa*, A. Cunn.

"I am here in very comfortable quarters, having an ample room to myself in a new cottage, built of Kowdie (*Dammara australis*), on the premises of the principal of the mission, Mr. H. Williams, from which I can at once proceed to the woods, where the chief of my occupation has been since my arrival, when the weather at all permitted; but the winter rains here are tremendous; they are cold, heavy, penetrating, and when in showers, are of two hours' duration, with little intermission: but I have done tolerably well. You would have been overjoyed to have been with me on some of my days' excursions, for, although it is the winter with many trees, I have nevertheless had a good picking. Conceive of the tribe you delight in so much, the *Filices*, now rich in fructification; *Cyathea dealbata*, *C. medullaris*, very fine; and I believe a third arborescent one (*Dicksonia lævis*, Hew.) *Lygodium articulatum*, *Todea pellucida*, *Lomaria discolor*, *L. Fraseri*, *Asplenium lucidum*, *Cænopteris flaccida*, *Doodia Kunthiana* [‡], *Pteris rotundifolia*, *Aspidia*, several species; *Trichomanes*

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[*] Icon. Plant, t. 419, 420.

[†] The wood with this Number is not *Drimys*, but an undescribed species of *Myrsine* (*M. salicina*, Hew.)

[‡] *Doodia lunulata*, R. Br. MSS.

reniforme, and other species; *Hymenophyllum*, several species. I have seen imperfect specimens of my *Schizæa propinqua*, and will look out well for it in the spring (August). *Dendrobium Cunninghamii, Lindl.* grows in bunches on the trunks of *Trichilia* (*Hartighsia*) *spectabilis*, within ten minutes' walk of my house, and I am establishing it and other fine things in small pots for the two cabins (Ward's), which it is my intention to fill and carry back to Sydney, to be shipped for those truly excellent men, the Messrs. Loddiges. I have already a fine *Cyathea medullaris* in a pot, of the trunks of which, as also of its congener, I have furnished myself with logs to give to you and other friends sections when I return.

"Whilst I am writing this, a young friend has brought me some most magnificent specimens in fruit of that remarkabl plant that *ropes* itself spirally to the summits of the loftiest trees of these forests, *Freycinetia Banksii*, and these I hav put into diluted pyroligneous acid, in a keg, and as it is pr cisely the season for them, I shall obtain abundance, so th I shall be able to furnish a few friends with this rare plan of which I know of only one bottle of specimens in Europ viz., at the British Museum, which specimens were gathere by Solander in 1769, on this same east coast of New Zealan Of *Orchideæ*, I have seen (Epiphytes) *Earina mucronata* Lindl., *Dendrobium Cunninghamii*, Lindl., and the litt *Bolbophyllum pygmæum*, Lindl.; and of terrestrial gene *Thelymitra Forsteri*, Sw. (young), *Microtis Banksii*, A. Cunn and *Pterostylis Banksii*, R. Br. In the neighbouring fores *Podocarpus ferruginea*, D. Don, (Miro of the natives,) forms noble tree, and just now it is in fruit, which fruits are eaten the native pigeon. I have specimens drying, as also a bottle *Drupæ* in acid, to give to my friends. My plans are to visi as I have opportunity, all the stations now open to me, each of which to make a brief stay. I am now preparing f Waimate, fifteen miles off; thence across the island Hokianga, on the west side. I purpose going to t southern, as also to the northern little settlements along t coast, at which I can make any stay I may deem desirable. Finally, I hope to wind all up by the close of August, to be ready for embarkation back to Sydney."

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* Icon. Plant. t. 431.

Whether Mr. Cunningham was enabled to accomplish all he anticipated, is uncertain, (and considering his state of health very improbable); for his other letters from New Zealand only mention his movements generally. He left the islands the 30th of September, and landed in Sydney on the 13th of October, in a most deplorable state of health, of which he writes as follows:—

"I returned from the Bay of Islands on the 13th of October, having had a fair and expeditious passage across of fourteen days, in a small schooner of ninety tons. I landed in very ill health, arising from the excessive chill I experienced in New Zealand, and the consequent paralyzed state of my poor limbs and general organic derangement, in consequence of the meagre food and poverty of my diet generally, during the period of my sojourn among my missionary friends since the 25th of May last. I am housed here (Elizabeth-street) in a friend's cottage, and hope, by generous food and cheerful society, to get myself again on my legs, to do a little more before I embark for Old England. With this view I am lying by, and in a state of perfect quiet. I walk half a mile at noon, amidst a heated state of atmosphere (90° Fahr.), and under a blazing sun; but the New Zealand chill still hanging about me, renders my present state of existence far from comfortable. The truth is (and it is a folly to disguise it), I am past further great exertions. I can neither undertake any more expeditions interiorly, or walk about in search of any more plants; but a man cannot ever during life be on his legs. I have now been twenty-four years leading a vagrant kind of life; and if I have done the least good in that long period, so much the better. I can, however, do no more, save joining Capt. Wickham in the Beagle, next March, for a short while: but more presently on this head.

"I have brought back with me a fine collection of cryptogamous plants from New Zealand, which will interest certain of you greatly.* I collected some specimens of timbers, which are all well marked and named; and I have also a specimen of that rarest of all the birds of New Zealand, the Kiwi (*Apteryx australis)*, which I shall forward home to Mr. Yarrell, for the Zoological Society.†"

Notwithstanding his debilitated state of health, Mr. Cunningham's enthusiasm never forsook him; and he was now anticipating a voyage to the north-west coast of New Holland with Capt. Wickham, who was expected to return to Port Jackson in February. "The Beagle sails to-day (November 10th) for Bass' Straits, to make its complete survey, and to return to Port Jackson in February next. I have seen Capt. Wickham, who has expressed to me his delight to receive me on board, and give me a cot and mess; but, as I am too wea to join him on this short trip, I have proposed to accompan him on his great and final completing survey of the north-we coast in March next, on which six months may be employe I am undergoing at this time medical discipline, and trust t be hearty and well enough to accompany that excellent offic to the examination of a continent so full of interest, first see by Old Dampier on the 4th of January, 1688, and again b King, between the years 1818 and 1822. * * * * Ho fine *Grevillea robusta* (forty feet high) is at this time in th Botanic Garden, and at Mr. Macleay's, at Elizabeth Bay it is a mass of orange blossom: *Agnostis* is growing bravely but without signs of flowering; and that rarest of rarities *Nuytsia* of R. Br., is on the verge of a splendid flowering. It was brought to us by Baxter from Western Australia, an is the only specimen on our side of the continent.

"Good bye. I am weak and very chilly, (thermometer o the room 76°), and am tired, but must away to the port wit this letter. All shall hear from me next time, when strong and hearty. Your sincere friend, ALLAN CUNNINGHAM, quite worn out."

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* An Addenda to the *Floræ Insularum Novæ Zelandiæ Precursor*, containin the plants found by Mr. Cunningham on his last visit to New Zealand, and no previously described, will be published in a subsequent volume of this work.

† *Vide* Annals of Natural History, vol. iv. p. 312.

The intention of accompanying Capt. Wickham was, in consequence of his evidently increasing ill health, abandoned; for, in a letter, dated 12th April, 1839, he says,—"Capt. Wickham (Beagle) is on the point of sailing for our north-west coast; and, as he and I had proposed it, if I had strength in my limbs enough to join him, to accompany him round. However, as to that, I have failed in my best endeavours to patch myself up for long boatings from the vessel, on a heated coast, climbing hills, &c.; and as a consultation of four medical friends, each well knowing my case, has just taken place, the result being an unanimous opinion delivered to me, that I do not, on any consideration, go to a tropical coast, on which I could do nothing in the very enfeebled state of my limbs and almost constitutional dysentery, and where I should most probably make *a die* of it, since alone a cool climate would bring me about, with care also to diet, &c. In all this I acquiesced, and accordingly do not go with Capt. Wickham, who has approved of the prudence I have displayed, and the propriety of obtaining a sound medical opinion previous to giving any intimation to him regarding my joining his vessel. I shall now pass a quiet winter here with some up-country friends. Our autumn has already brought its lower temperature, and by July the cold will, I trust, have the desired effect on me. Our late summer heats (thermometer 90° to 120°), and a repeated dysentery, have pulled one-half the flesh off me that I had in October, 1836, at Strand-on-the-Green. But let's hope for better days. My friends, one and all, must be content with the labours of a man on his legs since 1814, twenty-five years, for I can do no more. That I am alive and writing this to you, after my visit of five months to New Zealand, is really a miracle. I look to my embarking for England in or before February next."

This purpose was unhappily frustrated by the hand of death, for the writer of this sketch received but one more letter from his amiable friend, in which, though evidently in a declining state, the cherished hope of again revisiting native land was powerfully and energetically expressed. letter is dated 8th of June.

“ I have, I think, my good friend, plied you with my and prosy letters often enough this year, one at leas believe, a month, so that I shall be right in entertaining doubt as to the propriety of thus exercising your patie were it not that I fancy you would wish to know somet of a man who, years and years ago, took the field of sci in which to pursue his explorations and *Paul-Pryings,* which he got shook, not solely in the shoulders, but in locomotives, almost to a positive foundering, as we say horse—of such a man, I think, you would gladly wis learn how he *now* stands on his limbs, and whether, aft that has been said or sung about his being thrown on beam-ends by that last sad visit to New Zealand, he even yet be able to walk his sober mile in the stre London or not; I therefore give you this. In regard t health, it is sensibly improving, but only by a slow pro sion and under the most rigorous regimen. No fruits vegetables of any kind at dinner, no wines, either whi red; for I have even now given up old crusted Port glass of which per diem I had until lately drunk), on acc of its acidity, and have now taken to toast and wate water slightly brandied. But as I dress altogether wi under covering of fleecy hosiery, and above well-found in and thus keeping a uniform temperature of warmth, t little exercise in the sun at noon, I feel I have at this ti writing acquired a degree of strength to enable me to about a little with cheerfulness and pleasure that a m ago I did not possess; *sed patientia omnia vincit.* Le weather this winter, which I am now in the midst of, warm, quiet lodging-house, and I hope, with good groun be in September restored to my wonted health; but great care, is to be exercised in the mean time. I am complaining of no disease, but great prostration of stren the dysenteric irritation I have overcome; tonics are now my only medicines, and these taken regularly at stated periods. Thus much of myself."

The termination of the life of this truly estimable man, however, was fast approaching. On the 24th of June he was removed from his lodgings in Sydney to the cottage in the Botanic Garden, for change of scene and air.—" On the 26th, after the visit of an old acquaintance, a clergyman, he expressed himself in these words: 'If it be the will of God that I recover, I will go to England; but if not, I submit myself with patience and resignation to the divine will.' On Thursday, the 27th, he was undressed and placed in bed; and just as he had lain down, he took Anderson's hand and clasped it firmly for some minutes, when suddenly the grasp relaxed, and his spirit had flown, without a struggle, to those realms where, I pray God, we may all meet when our time comes. You will thus be pleased to hear that our poor friend's last hours were passed in quiet; nothing happened to disturb him, and his last breath was sighed away in the arms of his faithful friend James Anderson.* Ever since Cunningham's return from New Zealand his health has declined, and his favourite pursuits of Botany and Geography have been rather neglected, except in the active movements of his mind; indeed almost his last rational words were connected with inquiries relative to the new colony of Port Essington, from which letters had been that morning received. Alas, poor Allan! he was a rare specimen—quite a genus of himself; an enthusiast in Australian geography; devoted to his own science, Botany; a warm friend, and an honest man; and, to crown all, when the time came, he resigned himself into the arms of his Saviour, without a murmur."†

Thus died Allan Cunningham, at an age far short of that allowed by the Psalmist as the period of human vigour, exhausted, doubtless, by the twenty-five years of unwearied

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* His successor in the superintendence of the Botanic Garden.

† Extract of a letter from Mr. Cunningham's old commander and much attached friend, and finally executor, Captain Phillip Parker King, R.N.

exertion, laborious travel, and the excitement of an u
enthusiasm for the science to which he had devote
He pressed onwards in his pursuits with a sing
heart and purpose which never chequered his suc
with an unobtrusiveness too often the companion
talent, and which, to the regret of those who know
stores of his mind, disinclined him from giving to t
during his life, material of information and delight.

His remains were deposited, on the morning of
July, in the Scottish church at Sydney, where a mo
tablet, bearing an epitaph from the pen of his long-
companion, Captain King, marks the spot.

The following extracts from the Sydney newsp
be perused with much interest.—" There have been
in this Colony who were more generally esteemed
late Allan Cunningham, and his death was, cons
much lamented. A statuary marble tablet to his
has been erected in St. Andrew's Presbyterian churc
the following inscription: 'ALLAN CUNNINGHA
and M.R.G.S., associated in the pursuit of Bota
covery with Oxley in exploring the interior of New
with King, in four times circumnavigating its coasts
subsequent personal research, having more fully
the Geography and Flora of the northern district
Colony and of Norfolk Island and New Zealand, h
enduring monuments of devotion to the cause of sci
eminence in those branches which he most as
cultivated. Frank, unaffected, firm in principle, w
feelings tempered by a most kind and benevole
deservedly beloved by his friends, some of them in
most rank of science, in England, France, and Ger
died in unrepining submission to the will of God,
calm dependence on the merits of his adorable
on the 27th of June, 1839, aged 48."*

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* Sydney Herald, Nov. 29th. 1839.

"A desire having been expressed by some of the friends of the late lamented Allan Cunningham, that some means should be taken with the view of testifying their respect for the memory of that gentleman, by the erection of a suitable memorial, in an appropriate situation, it is suggested by the undersigned, that all those disposed to concur in such a proposal should meet at the Botanical Gardens, on Wednesday the 30th of October, at 3 o'clock, for the purpose of adopting resolutions whereby the above intentions may be carried into effect.

"Phillip P. King, Captn. R.N.
"H. H. Mc Arthur, M.C.
"R. Lethbridge, J.P.
"C. Nicholson, M.D.
"J. Dobie, R.N."*

"It is the intention of the friends of the late Allan Cunningham to place a handsome sepulchral urn upon the small island in the lower Botanical Garden, which is surrounded by weeping willows. This is as it should be; it will have a very pretty effect, and will be an ornament to the Gardens; it will also show the high estimation and affection in which the deceased was held by a large number of admiring friends."†

An inscription on his father's tombstone, in Kensington churchyard, also narrates the circumstances of his career.

But while sculptured marble may tell to the cold ear of posterity the science and the virtues of the departed botanist, Allan Cunningham has placed a warmer and more touching memorial of his worth in the hearts of his contemporaries, which, till they too have performed their allotted tasks, will ever bear an earnest and enthusiastic testimony to the urbanity of his manners, the generosity of his disposition, the warmth of his affections, and the unbounded sincerity of his friendships.

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* Sydney Gazette, Oct. 26th. 1839.

† Ibid., Dec. 7th. 1839.

While a love of Botany exists, his memory will be honour as one of its most devoted followers ; and while a greenhou or conservatory remain, their gay and beauteous inhabitan will ever remind the spectator of his many and valu labours. With the Botanist his memory will be long che rished, and a due appreciation of his talents and industr must ever be awarded him for the indefatigable perseveranc with which, to use his own favourite phrase, he continued hi "pursuit of Flora," through the varied regions of Australia as well as for the generosity with which he diffused the store he had brought home with him, enriching the herbaria, no only of the English, but also of the continental botanist From the geographer, as he traces on the map of Australi the valuable discoveries made in that country during hi lengthened sojourn, the due meed of praise will also b awarded. But the great debt of gratitude to the memory Allan Cunningham is due from the agriculturist, who owes much to the indefatigable perseverance and research of t explorer of the vast pastoral country to the north-west a north of the colony of New South Wales.*

On CENOMYCE RETIPORA. *By* W. J. H.

(*With a Plate.* TAB. X.)

Having received copious specimens of this singular Liche collected in Van Diemen's Land by Ronald Gunn, Esq., a others, gathered recently in New Zealand, I am able to gi a figure, which will, I trust, exhibit the beautiful structu of this plant more correctly than the only representati that has yet been published,—I mean that of Labillardiè in his *Plantæ Novæ-Hollandiæ.*

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* It will doubtless be gratifying to the botanist to know that the valua and extensive herbarium of Allan Cunningham has reached this country safety, and is (by the kind bequest of the talented and amiable collector) the possession of the writer of the above sketch.

e *retipora;* thallo nullo (?), podetiis confertis
subcrustaceis ramosis cæspitosis demum concretis
reticulato-pertusis albis apicibus flavescentibus, ra-
rminalibus copiosis radiatis (nunc etiam inferioribus)
ıs, apotheciis minutis primum cylindraceis demum
ıosis vel etiam depressis superficie minute gra-

e retipora. *Achar. Syn. Meth. Lich. p.* 248. *Ach.*
l. Nov. Zel. v. 1. *p.* 32. *All. Cunn. Bot. of N. Zeal.*
t. Bot. Mag. v. 2. *p.* 232.
s retiporus. *Labill. Fl. Nov. Holl. v.* 2. *p.* 110. *tab.*
2.

sterile stony places, frequently among shrubs; Van
's Land. *Labillardière, R. Gunn, Esq., D'Urville,*
nningham, W. Colenso, Esq.

g in nature can exceed the elegant lace-like appear-
is plant, a structure one would little expect to meet
e humblest and least perfect part, as it is usually con-
f the vegetable creation, the Lichens. Labillardière,
wing him, Acharius, ascribe a thallus to this species,
taceous, with scattered shining granules;" but my
pecimens exhibit no appearance of a thallus. If it
is probably very evanescent. The podetia are
, crowded; the main trunk a quarter to half an
l, erect, copiously, almost from the base, alternately,
what dichotomously, branched with short, thick,
branches, which frequently unite with the adjoining
their branches; or, when free, they dilate, and are
their apices; or more commonly, especially in the
es, they again divide into several small radiating,
ntly nearly erect short and small branches, bearing
The texture of the entire plant is, as it were, be-
staceous and cartilaginous, not much unlike that of
nown *Cenomyce rangiferina;* but, instead of form-
niform tubular membrane, the whole surface is a
elegant network, the areolæ oval or rounded, vary-
what in size, but gradually becoming smaller in the

ultimate small ramuli; then the inside, instead of being tubular, is filled with the same tissue of network anastomosing in every direction from the base to the summit of all the branches. The colour is nearly a pure white throughout the main trunk and lower branches, yellowish in the upper part and in the upper fertile branches.

Apothecia small, copious, giving a curiously dotted appearance to the numerous, radiating branchlets, from the apices of which they spring. They are dark brown; many of them, apparently the younger ones, are cylindrical, or approaching to it, the more advanced ones nearly globose, and the mature ones, as it would appear, for they are the largest, depresso-globose. Labillardière represents and describes the younger apothecia, as "atra, cylindracea, apice excavata dum juniora, mox basim versus ampliata, cylindro a basi ad apicem per gradus evanescente, demum adulta capitata, plano-convexa, ambitu paululum reflexa." But I do not find any such excavation, or rather perforation, nor any peculiar enlargement of the base (giving the *apothecia* the appearance, according to Labillardière's figure, of the capsule of a *Splachnum*). Seen under a high magnifier, the *apothecia* appear to be granulated upon the surface.

Tab. x. fig. 1. Tuft of *Cenomyce retipora*, and fig. 2, single podetium of the same; nat. size, f. 3, portion of the main branch; f. 4, apex of a podetium; f. 5, 6, 7, Apothecia in different states: figs. 3-7, more or less *magnified*.

On a new Species of MENISCIUM, *from China; by* W. J. H.

(*With a Figure.*—TAB. XI.)

MENISCIUM SIMPLEX.—*Hook.*

Fronde simplici elliptico-oblonga acuminata hic illic grosse dentato-serrata basi profunde cordata v. subhastata, subtus venis hirsutis.

HAB. Hong Kong, entrance of the Canton river.—*Richard Brinsley Hinds, Esq.*

Caudex elongatus repens, squamis nigro-fuscis tectus, fibras nosas subtomentosas emittens, superne frondiferus. Stipes bspithamæus, erectus, flexuosus, crassitie pennæ passerinæ, raceo-fuscus, hinc canaliculatus, basi solummodo pale-o-squamosus. Frons omnino simplex, 5-8 uncias longa, longa seu elliptica, subcoriacea, margine nunc subinteger-a, nunc grosse subrepando-dentata, apice acuminata, basi funde cordata, et utrinque sublobata seu hastata, supra bra, subtus venis costaque hirsutis. Venæ ut in genere; l venulæ secundariæ, quæ liberæ in frondibus fertilibus, in rilibus non raro cum venula primaria superiore arcuata pissime confluunt. Sporangia non raro pilo uno alterove odita.

The *Meniscium cuspidatum*, of Blume, has sometimes simple ads, though the usual form is pinnated: but even in that e the much narrower fronds, attenuated at the base, will rays keep it distinct from the present one.

Four specimens of this species are before me, and they e very constant to the form here represented.

Fig. 1, portion of the fertile frond. F. 2. Sporangium: both *magnified.*

BOTANICAL INFORMATION.

BRAZILIAN PLANTS.

Mr. Gardner is at present occupied in distributing his tensive and beautiful collections of dried specimens from e province of Minas Geraes, in the interior of Brazil. The uthern portions of this great province have been frequently plored by Botanical travellers, but Mr. Gardner is the ly one who has brought to England large collections from northern and western parts. The finest of these plants ve been obtained from the Serra das Araras, a mountain ge far to the west of the Rio San Francisco, and from the subalpine tracts of the Diamond and Gold districts. just seen some bundles of them opened, and find th very different in character from any of his forme tions, and far more interesting to the botanist. A g of them having been collected on the most elevated the interior, their general appearance is strikingly d from the plants of the plains, or of the forests. The in particular, are remarkable for the smallness of the and the great size of the flowers, which is emine case among the *Melastomaceæ*, as is well exemplifie numerous beautiful species of *Lavoisiera*, which M ner's present collection contains, the stems of some resemble much more those of a *Lycopodium*, with cl bricated leaves, than dicotyledonous flowering shrubs also exist about fifty species of *Eriocaulon*, which, the number he has already discovered, make about 10 in all of this highly beautiful and curious genus foun Mr. Gardner's travels. But very few of these l resemblance to our own solitary species, *E. septang* great number of them are large suffruticose plan attaining a height of from four to six feet; ve branched, and the branchlets terminated by a lar ball made up of a vast number of smaller heads, p they inhabit. The collection is also rich in plants belonging to the tribe *Mutisieæ*, one of them being a magnificent species of the genus *Mutisia* itself. There are likewise many beautiful *Andromedas* and *Vacciniums;* three fine species of *Luxemburgia*, and two or three of *Lavradia*, both shrubby genera, belonging to the natural order *Violarieæ ;* three *Lupines*, one of which is a shrub six feet high, all with simple leaves; two kinds of the splendid genus *Physocalyx ;* and a host of other remarkable and interesting plants, far too numerous to be alluded to in this short notice.

Mr. Gardner believes that the present collection contains about eight or nine hundred species. There willthen remain two or three hundred more, collected after his return to the coast, near Rio, and on the Organ mountains, but differing from the species already distributed from those quarters; and a very few from the province of Maranham, in the north of Brazil. Many of the plants from the Organ mountains are strikingly curious and interesting, particularly those from the summit of the mountains; such as *Prepusa Hookeriana*, which was lately figured in the *Bot. Mag.* (tab. 3909): an *Utricularia*, with a flowering stem more than two feet high, bearing numerous large purple flowers, the leaves about three inches in diameter, peltate, cucullate, and borne on footstalks more than six inches in length. But what is most remarkable respecting this plant, is the circumstance of its only being found growing in the water which collects in the bottom of the leaves of a large Bromeliaceous plant that inhabits abundantly an arid rocky part of the mountain, at an elevation of about 5,000 feet above the level of the sea. In fact, the plants found by Mr. Gardner on the Organ mountains, during his last visit to them, are quite as interesting, if not more so, than those formerly gathered by him. Several of them we hope to be able to figure soon, both in this Journal and in the *Icones Plantarum*. After all these sets shall have been dispatched, there will still remain the whole of Mr. Gardner's *Mosses* and *Lichens ;* for neither of these tribes has yet been distributed. The Mosses are in the possession of our friend, Mr. Wilson,

who has kindly undertaken to name them; and it is M
Gardner's intention, we believe, to prepare a fasciculus
them, somewhat similar to his *Musci Britannici*.

There are still in hand a few sets of Mr. Gardner's Bra
ian Plants, not only of the present collection, but of nea
all his others, which are open for purchase at the rate of t
pounds per 100 species. The Editor of this Journal
transmit to Mr. Gardner any application for them.

NEW ZEALAND.

ANY information relative to the productions of an isl
which is likely to be so valuable an appendage of the Bri
crown as New Zealand, and which emigration is continu
connecting more and more closely with our own populat
cannot fail to prove acceptable to our readers. We th
fore take the opportunity of laying before them some extr
from a letter just received from Wm. Colenso, Esq., a gen
man who conducts the printing establishment attached to
Church Missionary settlement in the Northern Island.
Colenso has made many excursions in New Zealand,
often accompanied the late lamented Allan Cunninghan
his scientific expeditions.

Upwards of a year ago, Mr. Colenso sent a collectio
plants, gathered by him while botanizing with Mr. A. C
ningham, many of which are published in the Ninth
(which has recently appeared) of *Hooker's Icones Planta*
The plants referred to in the following extracts form a por
of another set, which has already arrived, and is in beau
condition.

"Paihia, Bay of Islands, July 20th. 18

"Since I had last the pleasure of addressing you, I
made a journey of about four weeks to Wangarei Bay
neighbourhood, in south lat. 36°, returning by a circui
route, *viâ* the interior. My primary object, as it must
necessarily be, was to visit the natives residing in those pa
but I always seize every opportunity of enlarging my
quaintance with the Botany of this interesting island,

nake all possible use of such facilities as fall in my [illegible]

trust that in the box now sent, you will find some both novel and interesting. One *new Pine* and two *chideæ* (not to mention several other plants, so far as aware, hitherto undiscovered and undescribed) have repaid me for any exertion that I have made on my . The greater proportion, however, of the specimens rwarded, are of known and described species. I have ed, in some cases, the burdening you with triplicates, h I cannot say much for their perfectness or beauty. have gone regularly through my herbaria, and have e pleasure of sharing their contents with you; and I hat the receipt of my specimens may give you the ratification as I have myself experienced, in gathering cking them up for you.

nong them you will find individuals of all the known *æ* and *Taxaceæ* of this island, in fruit, except the *Da- n plumosum*,* (Don,) which I have not yet myself seen state. This is rather a scarce *Pine* in this neighbour- inhabiting generally, though very sparingly, the ridges highest hills. I had made several journies before I meet with a single tree of this species, and such as I ubsequently seen were not in fructification. It is, , a very difficult matter to obtain a good specimen from the *Pine Tribe*, owing to the height and situation of it-bearing branches of these *Monarchs of the Forest.*

r. Lindley gives, as an *essential character* of *Taxaceæ*, ules naked, their *outer skin becoming finally hard*; seed ither altogether hard, or *surrounded by a succulent cup- pericarp*;—trees or shrubs, with continuous *unarticu- branches*.' If these be the real characters of all the of this Order, I presume that some, at least, of the Zealand species, must be formed into a new order. *odocarpus ferruginea* bears a large and *fleshy drupe*, and has certainly (if I understand the term aright) *ar* branches. So also does the *Mae* or *Matai* of the N landers (*Dacrydium Mai?* A. C.) Both of these fru their *epi-* and *sarcocarp*) are eaten by the natives. can equal the elegant appearance of the fruit of *Po ferruginea*, when fully ripe. Its carmine-coloured besprinkled with a glaucous powder, present a most b and tempting object to the traveller. Unfortunat flavour possesses so very much of that turpentine-like smack) peculiar to the Pine Tribe, as to cause these be invariably rejected, after a single trial, by the E visitant. The fleshy receptacle, which bears the nake in *D. excelsum*, is however much milder, and a f article of food with the natives. I have partaken pretty freely myself, and can assure you that it i means bad eating. So also the fleshy receptacles in *dium cupressinum* (*Rimu*) and *Podocarpus Totarra tara*), are consumed by the aborigines; but bein smaller, they are not so highly esteemed. The rec in all the species, are coloured from orange to crims in their season, assume a most splendid appearanc New Zealanders have told me about a *Kahikatea* (*Da excelsum*) which bears its ovules on a *white* recept have not yet seen it, though I have made assiduous and therefore cannot pronounce whether it be mer rity of *D. cupressinum*, or a distinct species.

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* it of this has recently been brought home by Mr. Edgerley, which to be that of a *Thuja*, as might almost be inferred from the foliage.

"In one or two cases I have had the good fortune to male flowers; but never having found flowers of bo on the same plant, I conclude, for the present, that all *diœcious*.

"The following are among the most interesting this colony, of which I now send specimens.

"A new species (as I believe) of *Laurineæ*. It small tree, from 12 to 20 feet high, and has a very aspect, owing to its *black* bark and strikingly-coloured When I first saw it, I pulled and tasted a leaf, and thought I should have lost the use of my mouth and from the heat caused by its excessive pungency. Of undescribed individual of *Laurineæ*, living plants were sent to England, which I assisted to gather and to pot, by my friend Mr. Busby; they went in two cabins. I named the species *Laurus Victoriana*. It grows 30 feet high, in the woods of the interior.

"A phial contains some fruits, in spirits, of a new species of *Myrtaceæ*, which seems rare. The inhabitants prize this fruit, which is well flavoured; and spreading their blankets under the shrubs, which they shake, soon procure a tolerable supply. I have seen some gallons thus obtained. In the fresh and mature state, the fruit is of a beautiful orange colour; those which I send, having been gathered by me and brought from some distance to Paihia, in a travelling box, have lost this brilliancy, and assumed a dull appearance.

"The *king of the whole lot* is my *new Pine*, from the high hills near the eastern coast. For many years I had heard of this tree from the aborigines, but could never obtain a specimen, no one knowing where it was to be found. They had heard of such a Pine, and some of the oldest chiefs had occasionally seen it, when hunting or shooting in the forests; but all agreed that it was very rare, only growing singly. The reason, too, for its unfrequent occurrence was this: TAUE, one of their illustrious Demi-Gods, hid it! Still it existed—a distinct tree—which never rotted! As a proof of all this, the people, wherever they could find one, reserved it for a coffin to hold the remains of a chief.

"These statements, you may well suppose, only inflamed my desire to possess this wonderful tree. I sought and sought, but all in vain, wherever I went, making inquiries and offering rewards for it, until I actually gained a name among the natives for doing so. At last, rather early in this year (1841), after a toilsome march through unfrequented spot and jungle, to the spot where I had been informed that one grew, I found it! I will not attempt to describe my satisfaction, which was much increased by observing that the specimens I had acquired were in fruit. The tree *(for a*

Pine) is not large, about 50 feet high, and 2½ feet in d but, from the New Zealanders' account, its chief valu in its resisting rottenness. In appearance, it some sembles the *Kahikatea* (*Dacrydium excelsum*); and I to suppose that it may constitute a new and connecti between *Phyllocladus* and *Dacrydium*. This, howe will ascertain. I did intend, if this *Pine* should be co the type of a new genus, to name it *Allania*, after and much-lamented friend, Allan Cunningham; bu that Schomburgk has preceded and anticipated m matter. I leave, of course, the bestowing of an ap to you. I also send a specimen of the wood. The the trunk is deciduous, but not like that of the *Tota* is fibrous; this is only scaly and brittle, as in the *I* *Australis*. Subsequently, on the same range of hill, I other of these *Pines*, of nearly similar size.

"I send you a specimen, preserved in acid, of a sp flowering *orchideous plant*, which grows parasitically woods of the interior. It bears some resemblance t *mucronata*, and possesses a powerful and diffusive f There are also some specimens of the vegetation summit of Tongariro, a very high and volcanic moun the centre of the island; some of which grew amid nal snows which clothe the cloud-capt summit of Among them is a *true Pine* (*Podocarpus Totara*), formed, with root, foliage, and fruit, yet only thre high! The branches of this pigmy tree were brach recumbent, and formed a circle of a foot in diam friend, who lives at Rotorua, one of our Mission about three days' journey from Tongariro, gathered me these minute specimens, having himself perfor adventurous journey to the top of this volcano; and fully resign them to you; hoping they will all prove living in the expectation of visiting those parts n January next.

Our *Ferns* are particularly numerous and lovely. *A* ful *Todea*, probably hitherto undescribed, and whic named *T. superba*, grows on Tongariro; a single specimen is all I could obtain, and I send it.

The *arborescent Ferns* attain a great size in New Zealand. I lately observed a prostrate, though still living stem, perhaps of *Cyathea medullaris*, which measured 42 feet in length, as it lay; *i. e.* from the end of the trunk to the apex, exclusive of the petioles of its fronds. It had been recently felled by a native, who had lopped off its leafy honours; it had, however, subsequently, while in that condition, shot out two new fronds.

The pith of the *C. medullaris* is eaten by the New Zealanders, and constitutes one of the best and most nutritive of all their indigenous articles of food. The fronds of this most graceful fern form a droop, often of 18 feet; and when seen to advantage, growing as it frequently does, singly, on the bank of a purling rill of delicious water, it presents such an object as may well entrance the beholder's gaze. The main stalk seldom attains a great height, from 12 to 14 feet up to the springing of the petioles.

Dicksonia squamosa, a truly stately fern, may often be seen in groups of from ten to forty, their average height from 6 to 10 feet. The *Cyathea dealbata* is the most light and airy of all our *Tree-ferns;* recalling, in its general appearance, those Palms which form so striking a character in Oriental scenery. At Owae, on the east coast, I once sent my little native lad, called 'Ruru,' to the top of a *Cyathea*, in order to ascertain its height. He gained the apex, and sate, rocking like a monkey, on the crown; the line which he cast down I accurately measured, and found it to be more than 38 feet in length. An owl may often be seen, umbrageously secluded from 'Sol's glaring eye,' perched on the petiole of one of its fronds.

"The '*Para*' of the natives is also a *Tree-fern*, and used to form one of their favourite articles of food, to which its present scarcity is probably now owing. It is apparently the *Marattia elegans* of Endlicher. It is remarkable for the joint-like process by which its frondlets are attached to the stipes, and which, in the living state, act like joints, perm ting the delicate foliage to play up and down with eve breeze of wind. *Lomaria Fraseri*, a very pretty fern, ofte when growing in its favourite humid woods, attains an arb rescent character. Once, when returning from Wange Bay, I passed through a dense and wet forest, where th graceful plant abounded. I gathered two specimens (one which I now forward to you) and much wishing to preser them entire, I carried them both for many a wea mile, through thick jungle and forests; sometimes protecti them with the flap of my coat, and sometimes with my bod from the *Rubus* and other shrubs which seemed determin on destroying my prizes. But I had the satisfaction of beari them home uninjured.

In a phial you will find specimens of what I believe to the true *Larvæ* of *Sphæria Robertsii*.* These larvæ a abundant in their season, on the foliage of *Batatas edulis* (the *Kumara* of the New Zealanders; to the great distress the natives, who cultivate this root as a main article of th food, and whose occupation, at such times, is to collect a destroy them, which they do in great numbers. They var little in colour, as may be observed in the specimens se The New Zealanders call them *Hotete* and *Awhe* (the sa on the branches of the Rata (*Metrosideros robusta*, A. C.) beneath which tree alone the *Sphæria Robertsii* has hitherto been found, when they fall to the earth beneath, die, and the *Sphæria* is produced.

I think I can offer a fact for consideration relative to their being only found beneath *Metrosideros robusta*. One fine evening last summer, when enjoying, as usual, a promenade in my garden, just as the sun had set, I was admiring the splendour of some fine plants of *Mirabilis*, which had just unfolded their scarlet petals. Suddenly several of these moths made their appearance, darting about the plants in every direction, pursuing one another, and eagerly striving to obtain the honey which lay at the bottom of the perianths of the *Mirabilis*. From this plant they flew upwards to the flowers of a stately *Agave (A. Americana)*, where, being joined by other moths, their congeners, their numbers soon increased; and thus they continued to enjoy themselves every evening, during the whole season. The inference I deduce is this, that the *M. robusta*, blooming at this season, having scarlet flowers, which abound in honey, becomes the centre of attraction of these insects, increased, too, by its densely crowded *coma* of inflorescence; more particularly so from the blossoms being always at the extremity of its branches; by which, and by their colour, this tree may at once be distinguished from the other denizens of the forest, even at a great distance.

The larva whereon the *Sphæria* is found, when first taken out of the earth, is white internally, and appears solid and succulent. A finely cut slice, when held against the light, presents a beautiful appearance.

I may mention that I think I have detected a second species of *Phormium*, very distinct from the *P. tenax* (New Zealand Flax). It is growing in my garden, and I want to see it flower before deciding on this point.

Extracts of a letter from Mr. Bowie, late Gardener to Baron Ludwig, of Ludwigsberg, Cape of Good Hope, to the Hon. W. H. Harvey.

Plumstead, C. of G. H., Nov. 1841.

I have it now in contemplation to undertake some excursions, to a distance of about 150 miles, in a north-east direction, in which I shall visit the mountain ranges of Zwellendam, Worcester, &c., for the purpose principally of making collections of seeds and bulbs for sale. Several persons have given me commissions to bring them these articles, and it is only in the districts I have mentioned they are to be found. Before my departure on these journies, it is always needful to form a garden as a depôt for those plants which I send home, and to leave a confidential person in charge of it, who will also assist me in planting and nursing such specimens as are not immediately exported. To meet this necessary expense, and the still heavier outlay incurred in the hire of horses, and purchase of tools, paper, and needful equipment for man and beast, I have been giving instruction and inspection in horticulture, a science which, it affords me much pleasure to say, is making a decided advance in this country; so that I do not despair of yet seeing prizes offered for the successful cultivation of flowers and vegetables in the villages round the colony of Cape Town.

If I devoted myself exclusively to the pursuit of visiting and improving gardens, and giving instruction to their owners, I doubt not I might make a good livelihood; but I now prefer to follow this employment merely as affording me daily bread, and enabling me to explore the botany of the country, which is attended with considerable cost, in expeditions, assistants, garden-furniture, glass, &c. I can always be certain of obtaining a fair remuneration for the rare plants which I bring home and cultivate for exportation; and, as I keep a small stock of the more saleable kinds, I could even now, at three days' notice, furnish bulbs (chiefly of the les common species of *Trichonema*, *Galaxia*, *Moræa*, and *Gladi* c.) to the amount of 200 rix-dollars; and if I found a ready y customer, I should have sufficient funds to commence excursions immediately. Till, however, some of my ng plants are sold or exported, which I expect to be in urse of a month, I cannot lose sight of them.

ay mention, that such is my desire to explore the y of the colony, that I have refused two or three promising ngagements, which would not have permitted of my ng my post. My health is much improved, and I anti- no hindrance to these excursions, which must be or shorter, according to the pecuniary means at my and.

t week I enjoyed a delightful day on the mountain Constantia and Houtberg, and it had been my inten- o devote two or three more days to Table Mountain, e weather, which has been squally and uncertain, per- d. Not that anything new can be expected in that y, but there are always some interesting and handsome to be found there.

m not surprised to hear that the Kew Gardens are not ow, as formerly, in South African plants, since the pre- fashion has been for those from Australia. When there, more than thirty years ago, there were very few *bryanthema*, of which department there had been as as 150 species; the *Aloes* and *Stapelias* had also dimi- d, for this tribe attracted very little attention. Subse- ly it increased again by contributions from Earl Tanker- and Mr. Anderson of Chelsea. But succulent plants t so easily replaced; for even in this, their native land, grow sparingly, and are scattered over a great space of ountry, and in the dry season the smaller species become runk and unconspicuous as hardly to be seen. The f packing them in coarse brown paper answers best; uring long waggon journies, even when closed in tight xes, I have known them, especially the more fleshy spe- s, to melt entirely away from the heat.

There has been some mistake* made with regard to the *Laurel* mentioned by Sir Wm. Hooker (Botanical Journal, vol. iv.) It is the *Laurus bullata*, the *Stinkwood* of this colony; but it is not correct that I ever called it, or its timber, African Oak, for I perfectly knew the genus to which it belonged; and when, in 1823, I carried a plant of it home, I had the honour of pointing it out to His Royal Highness the Duke of Clarence (afterwards His Majesty King William the Fourth), as the *Ship Timber* of the Cape, and which Sir Jahleel Brenton particularly recommended for the construction of ships. The transports which brought out the settlers, loaded with this wood on their return to England, at the now neglected Knysna. The specific name of *Laurus bullata* was given by Burchell.

Histoire Physique, Politique et Naturelle, de l'Ile de Cuba. Partie Botanique. Par A. RICHARD. Paris.

We have lately received several of the first Numbers of the botanical part (by M. A. Richard) of the *History of the Island of Cuba*, of M. Ramon de la Sagra. The letter-press is in 8vo; the plates extremely well executed in line engraving. from drawings by Vautier, in 4to.

The general nature of this important work will be best understood by the following extracts from the introductory pages. From them, indeed, we learn that the botanical riches of this fine island have yet been very imperfectly explored; and more than ever do we regret that it was the grave of Thomas Drummond, who, had he lived, would, by his indefatigable researches, have added greatly to the extent of the Flora, especially of the mountain ranges.

"The Isle of Cuba, though placed by its geographical position, its great extent, the richness of its cultivation and extent of its commerce, in the first rank among the Antilles, has been studied in anything like a complete manner as the natural productions which characterise it. For e, its Botany, the only portion upon which we are alled to speak, is the least known of any of these . Jamaica, St. Domingo, Martinique, and Guadaloupe, een repeatedly explored by naturalists and travellers, ave brought their varied vegetable productions to . The works of Sloane, Brown, and Swartz, have lly made known the plants of Jamaica: those of the slands have been described in many *monographs* or works, published in different parts of Europe; as, for e, those of Plumier and Jacquin.

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* This mistake had been corrected in the list of *errata*, appended to vol. 4 of the *Journal of Botany*.

ba, on the contrary, has been visited by very few ts; the stay of Jacquin in this island was very brief, e limited number of plants which he gathered, are ed up and down, in the many publications of this botanical traveller. The same may be said of MM. oldt and Bonpland, who merely touched at the Ha-, and explored its immediate environs. The *Florula*, led by M. Künth to the *Nova Genera et Species*, and contains a list of 156 species, the greater part new, is ow the completest work that we possess on the vege-of this great island. M. Poeppig, who has so success-xplored many of the districts in the republic of Chili, ught many species from Cuba, many of them already ed in the periodical German works, especially the . Such are all the materials that we had hitherto sed towards elucidating the vegetation of Cuba.

e following pages are intended to make this vegetation known. They are compiled chiefly from the materials ed by M. Ramon de la Sagra, during a residence of ears in this island, and which are the produce either of *vant's* own excursions into the different parts, or of ions received from various resident botanists, with his situation brought him into contact. These mate-which are pretty numerous, are amply sufficient to give eral notion of the plants of Cuba; not that it is to be supposed that all the districts of so extensive an island have been thoroughly ransacked or equally explored. The eastern part has been little visited, though the few specimens which have been gathered in its virgin forests and mountainous tracts exhibit a highly interesting character.

"The portion of the island of Cuba which extends west of the Havannah is well known to be the most inhabited, the best cultivated, and consequently the best explored. As might, therefore, be expected, it affords the greater part of the species which will be described in this work, and its surface is considerably varied, embracing rivers and marshes, hills both bare and wooded, and plains, often in a state of nature. The fine original forests, which are the chief ornaments of tropical countries, are not seen within several leagues of the capital, and those in the environs of Havannah, are but little elevated above the level of the sea. Generally speaking, the southern districts of Cuba are low, and clothed with marshy forests; the west is remarkable for its rich vegetation, its mountains from 600 to 700 mètres (3,600—4,200 feet) high, fertile and agricultural plains, and virgin forests. The north-east is well explored, and presents forests and river-banks of considerable interest, while the same may be said of the central portion, and the east is very little investigated.

"The Natural Arrangement of M. De Candolle is followed in the 'Botany of Cuba:' and we have bestowed peculiar care on the new species, describing them with all possible accuracy, and dismissing those which are already well known, in a single characteristic phrase; except when their structure has seemed to be mistaken or imperfectly understood. The more progress science makes, the more is the need felt of complete descriptions, even of the commonest plants. These are the materials which the *monographist*, or botanical philosopher, is so glad to find ready to his hand.

"There will be seen some trifling changes in the limits of Genera and their characters; but generally speaking, we have been very cautious in admitting any new Genera. The science of Botany is already of such extent, its materials

increase so much, that we think it wiser to limit the
ber of Genera than unnecessarily to multiply them.
anists have been too exclusively addicted to hunting out
differences among plants, so as to form new groups and
era. An opposite course might be preferable, that of
overing the analogies, similitudes, and connexion between
m; and this research would seem more conformable to
philosophical spirit of the science, and would operate
urably on the future prospects of Botany.

The Plates represent chiefly the new species, or occa-
ally give details of those plants which offer something
uliar in their organization. The analyses are executed by
selves, and with the greatest possible care."

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age Botanique dans le Midi de l'Espagne, l'année 1837.
Par EDMOND BOISSIER. *Large 4to. Paris.*

f this extremely valuable and beautiful work, seventeen
aisons are now before us, each consisting of four or five
ets of letter-press, and accompanied by ten partially but
l-coloured plates, from the pencil of M. Heyland. On a
re occasion, we shall offer our readers some extracts from
highly interesting "Narration" contained in the first
pter. We shall content ourselves at present with an-
ncing the rapid progress this work is making. Indeed it
st be very near its completion; for it is announced to
sist of sixteen or seventeen *livraisons*, and the letter-
ss (for the plates are published without order), following
arrangement of De Candolle, extends as far as the *Che-*
odeæ. The price is extremely reasonable, considering
beauty, and execution, and accuracy of the plates; 18
ncs a *livraison;* and we trust it will meet with the encou-
ement to which its great merits entitle it.

M. Boissier, having brought his "*Flora of the South of*
ain" to its present very forward state, has already, in the
rly spring, set out on his botanical travels into Greece and
rkey, and will not return to Geneva till the autumn. We

trust the result of this journey will be a publication on the classical regions he will have visited, similar to that which we have here brought before the notice of the public.

Plants of Spain and of the Swiss Alps, for Sale.

A considerable collection of plants has been brought by M. Reuter, herbarium-keeper to M. Boissier, of Geneva, mentioned above, from New Castille, which he wishes to dispose of, in sets, at 25 francs per hundred: each set containing from two to three hundred species, chiefly peculiar to Spain. The same botanist would also like to enter into arrangements for supplying the vegetable productions of the Swiss Alps.

The Regions of Vegetation: being an analysis of the distribution of vegetable forms over the surface of the globe, in connexion with Climate and Physical agents. By RICHARD BRINSLEY HINDS, ESQ., Surgeon, R. N.

However closely we may investigate the subject of Climate, to account for the various peculiarities of the vegetable kingdom, we shall cease from the enquiry with the conviction, that there are still many circumstances which it does not explain. In situations widely removed, but to all appearance enjoying a very similar climate, there occur features in the comparative vegetation which cannot be traced to its influence. Those combinations of atmosphere, temperature, moisture, light, and soil, all of which assist to constitute or modify climate will not, after the minutest scrutiny, satisfy us as to the laws regulating geographic distribution. Fully sensible that Nature, by which we always understand the Omnipotent Creator, has proceeded on an uniform and perfect plan, when calling into existence all organized beings, it becomes a matter of interest to enquire whether the diffusion of man or animals will aid us in ascertaining the distribution of plants. But, even respecting these, there is such diversity of opinion, that we hesitate which to follow. Man has been regarded by some to display three varieties, each possessing highly distinctive characters; others have encreased these to five, and maintain that this number is the most natural; and I have no doubt that those travellers, who have visited many different nations, will be disposed to assert that they are either far more numerous, or that there is but one, modified by the circumstances of food, climate, soil, dress, and customs. Some similar attempts have likewise been made to define a number of climates or regions for the animal kingdom, each possessed of peculiar and distinctive features.

The earliest of these theories was promulgated by Fabricius, but was confined to insects. He distributed the surface of the globe into eight divisions; 1st, The Indian. 2nd, Egyptian. 3rd, Southern. 4th, Mediterranean. 5th, Northern. 6th, Oriental. 7th, Occidental. 8th, Alpine. Many objections were soon urged against this, which is not surprising, when the Indian region embraced the tropics of both the Old and New World, and the seventh included North America, Japan, and China. Latreille was one of the foremost to criticise it, and advanced some very sound objections; but, strangely enough, subsequently framed a classification still more questionable. His climates were unflinchingly circumscribed by degrees of latitude and longitude, each having 12° of the former and 24° of the latter. As the land does not extend so far in the southern hemisphere as in the northern, he assigned it only five climates of latitude, but the northern had seven, reaching to 84° N. L. As each belt of latitude was to be divided at every 24th degree of longitude, an entire circle of the globe would comprehend of itself fifteen climates, and thus the aggregate of the whole be very considerable, even after an allowance for the intervening seas. A theory so decidedly artificial was likely to have few advocates beyond its proposer. Another method was framed by Dr. Pritchard,

which, though superior to the plan of Fabricius, is not
ciently important to merit detail.

More recently, Swainson has given attention to
subject, and has dwelt at some length on the distributi
the whole animal kingdom. He considers that the diffu
of the varieties of man should be a partial guide, and reg
the great divisions of the earth as so many distinct provi
keeping to their geographical limits, excepting where
varieties of the human species overstep them. His opin
are supported, often skilfully, by reference to the nat
groups of animals, more particularly birds, and he has se
on the peculiarities of different portions of the contine
without defining more minutely the divisions. On one p
we venture to differ from him; he regards the two Amer
as constituting only one province, whilst to us, they ap
to differ in productions equally with the others, and, assure
are as completely geographically defined as Europe or A
from Asia.

From the dependence of animals on the vegetable king
for food, it is reasonable to suppose that both are diff
after a similar method. Insects, so often drawing t
nourishment from plants, will naturally follow the rang
the particular kinds to which they are attached; and b
and animals, again, restrict their wanderings to the ne
bourhood of their particular aliment. The imme
dependence of animals is first seen in the fructivorous
graminivorous insects and birds, and the indirect in
raptorial kinds, ever seeking food among their less rapac
compeers. In both kingdoms it is equally difficult to as
laws for their geography; nor is it likely the object w
be more rapidly accomplished by community of resea
though both the Botanist and Zoologist labour for the s
object, and in pursuit, perhaps, of the same laws. Each
best seek the desired end by the method which his favo
science points out, and with the ideas resulting fro
knowledge of its peculiarities, and thus two roads wi

d for the inquiry. In this manner, and with the ials daily accumulating, it is not unlikely that the t will soon meet with all the elucidation it is capable eiving.

anists have not failed to bestow attention on the phic distribution of plants, and with some success, portant facts have been developed bearing closely on ibject. In particular, De Candolle and Schouw have d the world into several regions, according to the of each, and though their numbers closely correspond, istricts assigned to each widely differ. Some limited have also been subjected to regional divisions; as f France by Lamarck, and De Candolle; and that of nited States, by an anonymous writer,* in which is d the nomenclature of Schouw. The regions of both andolle and Schouw appear to me objectionable, since re too numerous to maintain to each the character of ces; whilst they are too few to convey correct impres- of the numerous closer peculiarities of the vegetation earth's surface.

ouw's regions are liable to the above objections, of too nnmerous for provinces, and too few for regions. also be observed that too great variety is adopted in omenclature; some having political designations, others are named from their most characteristic ble productions. Even these latter are strangely d, as in the separation of the region of arborescent *sitæ*, from that of *Asters* and *Solidagos*. Undoubtedly, plication of botanical names to regions is pretty, but ise is apt to give undue importance to the plants hing the designation, as in his regions of *Magnoliæ*, *inceæ*, and *Mesembryanthema*, and *Stapeliæ*. These are

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the American reprint of Murray's *Encyclopædia of Geography*, icle on the United States has been re-written, and the portion l to Botany gives a very full and able detail of its features, with ighly interesting particulars respecting range of growth, economic ies, and other useful subjects.

better adapted to the smaller sections of a flora, or region, where the prevalence of a tribe is of more importance. Schouw considers that in each region one-fourth of the genera which belong to it should possess there the chief part of their species, and that one half of the species should be peculiar; whilst he also mentions the importance derived from families having their principal stations there. These are, however, at best, very arbitrary rules.

In venturing to advance opinions of my own, I must premise that they are founded on convictions, the result of such experience as I have had; and though I am far from maintaining that the division of the globe into regions is *natural*, yet, I must admit, that the large continents present several very striking changes in their vegetable productions. The western coast of the Americas forms a boundary to the Pacific, extending north and south for about eight thousand miles. With nearly the whole of this I had an opportunity of becoming acquainted, in a voyage prolonged several years, and I became strongly convinced of the individuality of the flora within certain ranges. But for this, I should, in all probability have been content to limit the regions to the number of Professor Schouw.

There are so many, and such decided differences between the large continents, that it may be occasionally advisable to retain them as a whole, previous to their further division into regions. It is unnatural, I own, do so, but the plan has its conveniences. Seven botanical provinces may be enumerated, the European, the Asiatic, the African, the North American, the South American, and the Oceanic. The islands in their vicinity are considered as forming a part of the province of the neighbouring continent, and all the Polynesian islands are included in the Australian. These provinces must be regarded rather as convenient assemblages of regions, under which the physical conditions of the country, the direction and height of the mountain chains, and the general features of the climate can be studied; than as sections of the world, erected on natural characters.

Regions are subdivisions of provinces, and vary in number in each, according to circumstances. The chief object is to constitute them on the largest assemblage of natural features, and be occasionally guided by general character as well as minute details. For several reasons it is sufficient that they possess a certain number of peculiar species, without any relation to corresponding genera or families. First—In two analogous regions of different hemispheres, or continents, there may be a very close resemblance among the genera, when nearly the whole of the species are peculiar. Second—In mountain ranges it is unusual to find peculiar genera, yet a great number of the species may be so, and several of these chains have every claim to be considered distinct regions. Third—It must be remembered that genera are often artificial ssemblages, and that a safer course is pursued by directing ur attention to species. The general appearance and nature f the vegetation are important, whether consisting of forest, or f low bushy plants, or of herbaceous kinds, or of sandy plains nd their appropriate plants. Negative circumstances have lso their weight, as the absence of trees in particular regions; lso the non-existence of *heaths* in America, and *Cacteæ* in Asia and Africa. The presence or absence of a plant may ssist in determining geographic relations; thus *Erica vulgaris* s indigenous in Greenland, which renders it more natural to ssign this country to Europe than to America which has no heaths.

When the regions are once satisfactorily established, it would be desirable that all floras should be defined by them, instead of the present injudicious method by which they are too often circumscribed within political boundaries. Each flora might then advance separately to perfection, and the ample details which should accompany it would include a complete account of a particular state of vegetation. The local vegetation of the whole world would be contained within a definite compass, research be greatly facilitated, and the references of travellers much lightened.

Whilst endeavouring to sketch an outline of those regions

which appear more decidedly to possess natural features, I shall do so in the briefest manner, merely hinting at those circumstances which are likely to have a physical or general influence, and alluding slightly to those peculiarities which seem to authorize divisions. In attempting this, it will sometimes happen that we can only indicate what are likely to become regions, rather than what may now be considered such, when so much has to be added to our knowledge, and in such cases we must be guided by inference and analogy.

(*To be continued.*)

Notes on MIMOSEÆ, *with a Synopsis of Species. By* GEORGE BENTHAM, *Esq.*

(*Continued from the Journal of Botany*, vol. iv. p. 418.)

Tribe III. ACACIEÆ.

Calyx et corolla æstivatione valvata. Stamina indefinita, libera v. monadelpha. Pollinis granulæ in massas 4 v. 6, in quoque loculo antherarum agglomeratæ, in quaque massa 16.

XX. ACACIA (*Willd.*)

Flores sæpius polygami. Sepala 3-5, in calycem campanulatum coalita v. libera. Petala totidem, plus minusve coalita, rarius demum libera. Stamina numerosa (sæpius ultra 50), libera v. ima basi in cupulam brevem v. in discum perigynum breviter et irregulariter connata, rarius (in floribus masculis) in columnam centralem congesta, nec in tubum cylindricum monadelpha. Legumen varium, sæpissime siccum.—Arbores v. frutices, rarissime (in *A. hirta*) herbæ. Folia omnia v. saltem primordialia bipinnata, caulina in *Phyllodineis* ad petiolum foliiformem simplicem reducta, v. in *Aphyllis* omnino nulla. Glandulæ in bipinnatis ad petioli marginem superiorem, *petiolares* infra jugum infimum pinnarum majores, *jugales* minores inter v. sæpius paullo infra pinnarum paria superiora v. omnia, et nonnunquam inter foliolorum paria suprema. In omnibus tamen *Filicinis*, et rarius in *Gummiferis Botrycephalisve* paucis, glandulæ desunt. Spinæ adsunt stipulares in *Gummiferis* omnibus, necnon in *Phyllodineis* nonnullis; axillares in *Pulchellis* quibusdam et in A. *bifurca*. Rami etiam interdum spinescunt. Aculei in *Vulgaribus* plerisque obvii. Stipulæ si non spinescunt, sæpius minimæ sunt v. obsoletæ, rarius membranaceæ, amplæ. Flores parvi, capitati v. spicati, nunc densissime imbricati sessiles, bracteolis sæpe stipitatis lamina peltata v. ovata, nunc pedicellati subumbellati, nunc interrupte spicati. Calyx sæpius corollæ dimidium subæquans, rarius brevissimus, in A. *squamata* tamen et calyx et corolla desunt. Stamina sæpius 50 ad 400, brevia v. rarissime semipollicem æquantia, sæpissime flava v. aurantiaca, in *Filicinis* alba. Ovarium in *Vulgaribus* stipitatum, in cæteris seriebus sessile. Legumen sæpius siccum, compressum, bivalve, subcoriaceum; occurrit tamen teres, v. variis modis difforme, membranaceum, lignosum v. rarius subcarnosum, indehiscens, v. rarius elastice et in *Calliandris* dehiscens; intus sæpius uniloculare est, continuum et epulposum, in *Phyllodinearum* tamen et *Gummiferarum* speciebus quibusdam observatur transverse septatum, farctum, v. tenuiter pulposum. Semina transversa, rarius ongitudinalia, appensa funiculo filiformi juxta semen sæpe plus minusve in strophiolam dilatato.

A dry two-valved pod has been the character hitherto chiefly relied upon for the distinction of this extensive genus; but this has not only the great inconvenience that there are but few cases where the ripe pod can be observed, but also it is often even then very uncertain, and not at all consonant with general habit and other characters. Many species, precisely similar in almost every other respect, have very different pods, and the same pod may be found in two *Mimoseæ* having scarcely any other point in common. I have, therefore, thought it better to derive the principal character from the flower, and by excluding all species with definite stamens, or with the filaments connected in a cylindrical tube, it has appeared to me that the genus *Acacia* becomes more natural

than it could be made by any other limitations hitherto proposed, and certainly very much more clearly and easily defined. Even in the subdivision of the genus, imperfectly as a great number of the species are as yet known to us, it becomes necessary to rely more on foliage and habit than on the pod, however diversified may be the forms assumed by that organ.

As to the distinction of species, I am aware that in many cases I have failed to give clear and positive characters; but here again I have had great difficulties to encounter from the above-mentioned cause, our very imperfect knowledge of so many species. It is not till we shall have obtained specimens in flower and fruit at various stages of development, of the majority of tropical species, that we shall be able to ascertain the relative value and permanency of the various forms which present themselves.

The following are the principal groups into which I have distributed the species of *Acacia*:

SERIES I.—PHYLLODINEÆ, *foliis ad petiolos foliiformos reductis, rarius omnino nullis.* (Australasicæ). Spec. 1-204.

§ 1. *Aphyllæ*, phyllodiis nullis. Spec. 1-2.

§ 2. *Alatæ*, phyllodiis decurrentibus. Spec. 3—11.

§ 3. *Armatæ*, stipulis spinescentibus, phyllodiis ex ovato ad lineare. Spec. 12—26.

§ 4. *Triangulares*, stipulis variis, phyllodiis parvis, angulo inferiore mucronato, superiore sæpe glandulifero. Spec. 27—39.

§ 5. *Pungentes*, stipulis minutis v. nullis, phyllodiis ex lanceolato ad subulatum brevibus acuminato-pungentibus. Spec. 40—61.

* Capitatæ plurinerviæ. Spec. 40—48. ** Capitatæ uninerviæ. Spec. 49—56. *** Spicatæ. Spec. 57—61.

§ 6. *Calamiformes*, stipulis subnullis, phyllodiis subulatis elongatis non pungentibus, inflorescentia capitata. Spec. 62—69.

§ 7. *Brunioideæ*, stipulis setaceis v. nullis, phyllodiis brevibus verticillatis v. sparsim confertis angustis teretibusve non pungentibus. Spec. 70—76.

§ 8. *Uninerviæ*, stipulis subnullis, phyllodiis ex ovato ad lineare non pungentibus uninerviis, inflorescentia capitata. Spec. 77—139.

1. Latifoliæ infl. simplici. Spec. 77—83. 2. Latifoliæ capitulis racemosis multifloris. Spec. 84—91. 3. Pauciflore, capitulis racemosis 2-4 floris. Spec. 92—94. 4. Squamatæ, capitulis racemosis junioribus squamis obtectis. Spec. 95—97. 5. Falcatæ, capitulis racemosis. Spec. 98—105. 6. Crassiusculæ, capitulis racemosis. Spec. 106—122. 7. Angustifoliæ, infl. simplici. Spec. 123—139.

§ 9. *Brachybotryæ*, stipulis subnullis, phyllodiis planis plurinerviis, inflorescentia capitata. Spec. 140—160.

§ 10. *Juliflora*, stipulis subnullis, phyllodiis plurinerviis rarius uninerviis subulatisve non pungentibus, infl. spicata. Spec. 161—195.

1. Subulatæ. Spec. 161—165. 2. Rectæ. Spec. 166—173. 3. Falcatæ legumine coriaceo. Spec. 174—184. 4. Falcatæ legumine cochleato. Spec. 185, 186. 5. Falcatæ legumine lignoso septato. Spec. 187—195.

§ 11. *Dimidiatæ*, stipulis subnullis, phyllodiis obliquis falcatisve dimidiatis 2-4-nerviis transverse venosis. Spec. 196—204.

* Infl. capitata. Spec. 196—200. ** Infl. spicata. Spec. 201—204.

SERIES II.—BOTRYCEPHALÆ. *Inermes, foliis bipinnatis, capitulis racemosis, pedunculis solitariis* (Australasicæ). Spec. 205—217.

SERIES III.—PULCHELLÆ. *Inermes v. spinis axillaribus, foliis bipinnatis, capitulis v. spicis axillaribus, pedunculis e quaque gemma solitariis (in axilla sæpe pluribus).* (Australasicæ). Spec. 218—228.

SERIES IV.—GUMMIFERÆ, *stipulis spinescentibus, aculeis nullis, foliis bipinnatis.* (Americanæ, Africanæ, Asiaticæ). Spec. 229—276.

§ 1. *Summibracteatæ*. Spec. 229—247.

* Americanæ. Spec. 229—240. ** Africanæ. Spec. 241—247.

§ 2. *Medibracteatæ* (Africanæ v. Indicæ). Spec. 248—266.

§ 3. *Basibracteatæ* (pleræque spicatæ). Spec. 267—276.

* Americanæ. Spec. 267—272. ** Africanæ v. Asiatic Spec. 273—276.

Series V.—Vulgares, *stipulis innocuis, aculeis infrasti pularibus sparsis v. nullis, foliis bipinnatis petiolo glandulifer pedunculis sæpius subfasciculatis.* Spec. 277—329.

§ 1. *Diacanthæ*, aculeis infrastipularibus, infl. spicata rariu subcapitata. (Africanæ v. Asiaticæ). Spec. 277—288.

§ 2. *Ataxacanthæ*, aculeis sparsis, infl. spicata. Spec. 289—29

* Africanæ. Spec. 289—290. ** Americanæ. Spec 291—294.

§ 3. *Nudifloræ*, inermes, infl. spicata. (Americanæ). Spec 295—297.

§ 4. *Concinnæ*, aculeis sparsis, infl. capitata, legumine crasso coriaceo subcarnoso septato (Asiaticæ). Spec. 298—302.

§ 5. *Pennatæ*, aculeis sparsis v. nullis, infl. capitata, legumin plano coriaceo v. chartaceo. Spec. 303—329.

* Asiaticæ v. Africanæ. Spec. 303—307. ** American Spec. 308—329.

Series VI.—Filicinæ, *inermes, foliis bipinnatis eglandu losis.* (Americanæ). Spec. 330—340.

Series I.—Phyllodineæ. *Folia ad petiolos foliiforme reducta, rarius omnino nulla.*—Frutices v. arbores Austra lasiæ v. insularum Oceani Pacifici incolæ, sæpe glaucescente inermes v. spinescentes. Aculei nulli. Stipulæ nunc setaceo spinescentes, nunc minutæ v. nullæ, rarius phyllodiiforme Phyllodia sæpius verticaliter dilatata, nervo unico v. pluribu longitudinalibus, venis pennatim dispositis transversis, longitudinalibus parallelis v. reticulatis. Margo phyllod sæpius nerviformis plus minusve incrassatus, superior gla dulis 1-4 plus minusve conspicuis notatus, rarius omni eglandulosus. Inflorescentia capitata v. spicata, peduncul axillaribus solitariis fasciculatisve v. in racemis axillarib dispositis. Flores sessiles densi v. in spicigeris nonnull dissiti. Bracteolæ nunc stipitatæ laminâ peltatâ v. ovatâ, nu

cuminatæ. Ovarium sessile. Legumen lineare v. ob-
planum, teres v. tortuosum, sæpius marginatum, rec-
tum v. varie flexuosum v. tortum, intus nudum v.
nina septatum, valvulis coriaceis v. lignosis rarius
branaceis dehiscens. Semina sæpe strophiolata.
road, short, almost semilunar pod, is peculiar to the
he woody septate pod, with elastic valves, is only
some of the *Julifloræ;* the somewhat fleshy valves
r two of the *Dimidiatæ.*

yllæ. Phyllodia omnino nulla, gemmis nudis v.
atis.

restiacea (sp. n.), glabra, ramulis substriatis muticis
capitulis pedunculatis racemosis multifloris, racemis
amis imbricatis suffultis.—Frutex ascendens, ramulis
nibus. Nodi omnino nudi. Racemi laterales, laxi,
res, flexuosi. Squamæ ovato-lanceolatæ, concavæ,
triatulæ, interiores 3 lin. longæ. Bracteæ, squamis
bus similes, ad apices pedunculorum capitula juniora
t, demum deciduæ. Flores pentameri. Calyx
nus, profunde fissus. Ovarium glabrum.—Swan Ri-
iss, n. 323.

spinescens (sp. n.), glabra, ramulis striatis spines-
aphyllis, gemmis squamulatis, capitulis sessilibus
, calyce truncato subdentato dimidio corollæ breviore.
nulæ ad nodos parvæ, fuscæ, lanceolatæ, gemmas juni-
egunt. Flores magnitudine *A. alatæ*, plerique penta-
etalis nervatis.—Australia, *Fraser.*

tæ. Ramuli phyllodiis decurrentibus 2-3-fariam alati.
læ spiniscentes v. sæpius minimæ deciduæ. Inflo-
ntia capitata, simplex v. irregulariter racemosa, rarius
a.

bossiæoides (Cunn. MSS.) glaberrima, glauca, stipulis
lanceolato-semisagittatis, phyllodiis triangularibus
icis marginatis eglandulosis v. basi superiore minute
feris reticulato-venosis longe et late bifariam de-
bus, cum phyllodio inferiore in alam continuam
.—Liverpool River, N. Coast, *A. Cunningham.*

Though I have not seen the flower, this is so remarkable a species and so evidently allied to *A. alata*, that I was unwilling to leave it unnoticed. By the continuance of the wing from one phyllodium to the one next below, the axillary gemma is removed to a distance of 2 to 4 lines from the stem.

4. *A. alata* (Br. in Hort. Kew. ed. 3. v. 464), glabra v. hirta, stipulis subspinescentibus, phyllodiis falcato-ovatis longe bifariam decurrentibus, margine superiore angulo glandulifero, nervo subcentrali in mucronem pungentem rectum excurrente, pedunculis monocephalis, capitulis 8-15-floris.—Wendl. Diss. t. 1.; Bot. Reg. t. 396.—Phyllodiorum pars libera ½-1-pollicaris, vix angustior quam longa. Pedunculi solitarii v. gemini. Calyx minutus. Legumen stipitatum, falcato-oblongum v. lanceolatum, valde incurvum, marginibus calloso-incrassatis, 1-1½ poll. longum, 4 lin. latum, valvulis convexis. Variat caule phyllodiis pedunculis et etiam leguminibus glabris v. hirsutissimis.—Swan River and King George's Sound.

5. *A. platyptera* (Lindl. in Bot. Reg. 1841; Misc. n. 10), hispida, stipulis subspinescentibus, phyllodiis falcato-oblongis longe bifariam decurrentibus, margine superiore angulo glandulifero, nervo subcentrali in mucronem recurvum excurrente, pedunculis monocephalis, capitulis 8-15-floris.—Bot. Mag. t. 3933.—Ab *A. alata* differt præcipue internodiis longioribus, alis latioribus, phyllodiis proportione longioribus apice recurvis, mucrone vix pungente. Calyx ad medium fissus, brevissimus.—Swan River, *Drummond.*

6. *A. diptera* (Lindl. Bot. Reg. App. xv. non Humb. et Bonpl.), glaucescens, stipulis minutis v. obsoletis, phyllodiis parvis lanceolatis incurvo-falcatis longissime bifariam decurrentibus mucronatis eglandulosis, nervo margini superiori arcte approximato, pedunculis simplicibus v. hinc inde racemosis, capitulis multifloris.—Hook. Ic. Pl. iv. t. 369.—Forma normalis glaberrima est. Phyllodia valde remota, vix semipollicaria. Alæ nunc angustissimæ vix conspicuæ, nunc 3-4 lin. latæ. Racemi v. ramuli floriferi in axillis superiori-

pollicares, rhachi alata v. angulata. In axillis
us pedunculi sæpius simplices monocephali. Ala-
forma normali globosa, lævia. Capitula circa 20-
wan River, *Drummond;* Vasse River, *Mrs. Molloy.*

optera, velutino-pubescens, alabastris ovato-pyra-
ngulatis.—Swan River, *Drummond.*

dolabriformis (Wendl. Diss. 56), described from an
t specimen without flowers, is unknown to me.
llodia must be like those of *A. cuneata,* but are said
urrent, and the stipules are not spinescent.

stenoptera (sp. n.) glaberrima v. hinc inde scabrella,
parvis lanceolatis, phyllodiis lanceolatis linearibusve
falcatis longe et anguste bifariam decurrentibus
inescentibus uninerviis rigidis eglandulosis, pedun-
nocephalis, capitulis 6-10-floris.—Phyllodia (et alæ),
gida, 1½-3 lin. lata. Flores dimidio majores quam in
, corolla ante explicationem nervoso-striata. Le-
onge stipitatum, falcatum, turgidum, glaberrimum,
inferiore ut videtur anguste bialatum.—Swan River,
Drummond; Vasse River, *Mrs. Molloy.*

brachyptera (sp. n.), glabra v. scabriuscula, stipulis
etaceo-spinescentibus, phyllodiis lineari-lanceolatis
falcatis breviter trifariam decurrentibus apice spines-
uninerviis rigidis eglandulosis, pedunculis brevissi-
tariis monocephalis.— Habitus *A. incurvæ,* stipulæ
s, phyllodia pleraque semipollicaria, recurva nec
—King George's Sound, *A. Cunningham.*

. *incurva* (sp. n.), glabra v. hinc inde scabriuscula,
minimis, phyllodiis linearibus incurvis breviter et
rifariam decurrentibus apice subulato-spinescentibus
is rigidis eglandulosis, pedunculis brevissimis tomen-
nocephalis 4-8-floris.—Caules sesquipedales, erecti,
irgati, ad angulos sæpius scabrelli. Phyllodia 1½-2
. Capitula fere sessilia. Flores *A. stenopteræ.*—
iver, *Mrs. Molloy.*

. *triptera* (sp. n.), glabra, stipulis subnullis, phyl-
nceolatis recurvo-falcatis breviter trifariam decur-

rentibus apice spinescentibus rigidis striato-multinerviis eglandulosis, spicis cylindricis phyllodio subbrevioribus.—Phyllodia 6-12 lin. longa, 2 lin. lata, nervis crebris tenuibus parallelis, centrali cæteris validiore.—Barren lands, N. of Arbuthnot Range, *Fraser*.

§ 3. *Armatæ.* Caules non alati. Stipulæ spinescentes setaceæ v. rarius phyllodiiformes. Phyllodia ovata, oblonga v. rarius linearia, sæpius undulata et mucronato-pungentia uninervia v. rarius 2-3-nervia, reticulato-pennivenia. Inflorescentia capitata, simplex v. rarius subracemosa.

12. *A. crassistipula* (sp. n.), hirsuta, ramulis angulatis, stipulis phyllodineis persistentibus, phyllodio stipulis duplo longiore oblongo-lineari falcato-flexuoso uncinato marginato uninervio vix mucronato, pedunculis monocephalis phyllodio subbrevioribus. Phyllodia rigida 6-9 lin. longa. Stipulæ phyllodiis similes sed dimidio minores. Capitula multiflora. Bracteolæ stipitatæ, lamina ovata. Calyx dimidium corollæ superans.—Swan River, *Drummond*.

13. *A. teretifolia* (sp. n.), glaberrima, ramulis angulato-striatis, stipulis subulato-spinescentibus subrecurvis, phyllodiis lineari-teretibus substriatis mucronatis, pedunculis monocephalis phyllodio multo brevioribus.—Phyllodia sesquipollicaria fere *Calamiformium*, subpungentia. Stipulæ pleræque 2-3 lin. longæ. Pedunculi vix stipulis longiores. Flores glaberrimi, læves, calyce brevi.—Swan River, *Drummond*.

14. *A. barbinervis* (sp. n.), piloso-hirta, ramulis angulatis, stipulis minimis setaceis subspinescentibus, phyllodiis linearibus falcato-flexuosis uninerviis mucronato-pungentibus marginibus incrassatis, pedunculis monocephalis phyllodio brevioribus, capitulis sub-15-floris.— Phyllodia 1-1½-pollicaria, vix linea latiora. Florum alabastra acuta. Calyx laxus, corolla striata triplo brevior.—Swan River, *Drummond*.

15. *A. auronitens* (Lindl. Bot. Reg. App. xv.), ramulis teretibus hirsutis, stipulis brevibus setaceo-spinescentibus, phyllodiis lineari-oblongis incurvis utrinque acutis mucronato-subpungentibus crassis rigidis uninerviis marginatis medio

e glanduliferis, pedunculis glabris phyllodio subæqui-
, capitulis multifloris.—Phyllodia semipollicaria. Brac-
in capitulo subulatæ. Flores obtusi. Legumen vix
are, lineare, latiusculum, crassum, late marginatum,
um, valvulis convexis coriaceis.—Swan River, *Drum-*
.

. *A. Bagsteri* (sp. n.), glabra, ramulis angulatis, stipulis
scentibus, phyllodiis lanceolatis v. oblongo-linearibus
ndulatis rigidis binerviis, nervo altero subcentrali in
lam excurrente, altero submarginali, pedunculis phyl-
2-3-plo brevioribus, capitulis multifloris.— Habitus
A. crassistipulæ et *A. auronitentis*. Phyllodia semipolli-
Stipulæ demum deciduæ.—King George's Sound,
er.

A. nervosa (Dc. Leg. Mem. 444), glabra, ramulis angu-
stipulis setaceo-spinescentibus, phyllodiis lanceolato-
gis subundulatis incurvo-falcatis utrinque acutis mar-
s supra basin minute subglanduliferis nervo subcentrali
cronulum excurrente, pedunculis phyllodio 2-3-plo bre-
us, capitulis paucifloris.—Caules in speciminibus Drum-
ianis pedales, simplices, phyllodiis subsesquipollicari-
n Fraserianis ramosiores, phyllodiis minoribus. Flores
nque tetrameri, calyce brevissimo. Legumen junius
e, crassum, marginatum, glabrum. *A. myrtifoliam*
mmodo refert, sed stipulis, inflorescentia etc. abunde
cta est.—Swan River, *Drummond*, *Fraser*.

A. congesta (sp. n.), ramulis teretibus puberulis sæpe
scentibus, stipulis brevissimis rigide spinescentibus,
odiis inæqualiter ovato-oblongis undulatis glabris penni-
nervo in mucronulum brevissimum obliquum excur-
, pedunculis phyllodio subbrevioribus ad nodos congestis,
ulis dense multifloris, calyce corollæ dimidio subæquali.
muli breves, rigidi, divaricati. Phyllodia fere *A. armatæ*,
proportione latiora, crassiora. Stipulæ vix semilinea
ores. Flores fere *A. armatæ*.—Swan River, *Drummond*.

. *A. armata* (Br. in Hort. Kew. ed. 3, v. 463), ramulis
lato-striatis pubescentibus, stipulis spinescentibus,

phyllodiis dimidiatis obliquisve ovato-oblongis v. oblongo-lanceolatis undulatis glabris penniveniis muticis v. nervo in mucronulum brevissimum obliquum excurrente, pedunculis phyllodio vix longioribus, capitulis globosis dense multifloris, calyce dimidium corollæ subsuperante.—Bonpl. Malm. t. 55; Bot. Mag. t. 1563; Bot. Cab. t. 49.—*A. furcifera*, Lindl. in Mitch. E. Austr. ii. 267. Phyllodia pleraque 6-10 lin. longa, sed magnitudine et proportione valde variabilia. Legumen lineare, falcatum, villosum, valvulis submembranaceis convexiusculis.—Interior of N. S. Wales, Blue Mountains, &c.; and perhaps King George's Sound, *Bagster*.

β. angustifolia. A. paradoxa, D. Prod. ii. 449. *A. undulata*, Willd. Enum. Suppl. 68. Wendl. Diss. 11, t. 3. Bot. Reg. t. 843. Bot. Cab. t. 753.—Interior of N. S. Wales, *Cunningham*, &c.

γ. microphylla, phyllodiis minoribus pubescentibus.—Mount William, *Mitchell*.

δ. ornithophora, phyllodiis pubescentibus apice plerisque recurvis.—*A. ornithophora*, Sweet Fl. Austral. t. 24. Bot. Cab. t. 1469.—Vineyard, N. S. Wales, *Hügel*.

20. *A. hybrida* (Lodd. Bot. Cab. t. 1342), resinosa, pallida, ramulis vix angulatis glabris pubescentibusve, stipulis subspinescentibus nunc brevissimis, phyllodiis falcato-lanceolatis undulatis apice recurvis glabriusculis obscure penniveniis, nervo in mucronem uncinatum excurrente, pedunculis phyllodio brevioribus, capitulis dense multifloris, calyce dimidium corollæ æquante.—*A. micracantha*, Dietr. Gart. Zeit. *A. armatoides*, Hortul.—This has longer and narrower phyllodia than *A. armata*, and is often almost without spines. I have seen no wild specimens; and it is said by some to be a garden hybrid, which is not unlikely; but as I have as yet no convincing evidence of the existence of hybrids in this genus, I have for the present left it to rank as a species.

21. *A. tristis* (Grah. in Bot. Mag. t. 3420), ramulis striatis tenuiter puberulis, stipulis setaceo-spinescentibus, phyllodiis oblique lanceolatis incurvo-falcatis vix undulatis 1-2-nerviis, nervo centrali in mucronem subrecurvum excurrente acces-

epius margini superiori approximato, pedunculis phylevioribus, capitulis globosis dense multifloris, calyce dimidium æquante.— Phyllodia subsesquipollicaria acutata et subresinosa.—Of this also I have only seen ed specimens, which are in some measure intermediate *A. armata* and *A. verniciflua;* but whether it be species of Australian origin, or a mere garden variety id, I have at present no means of judging.

A. Hügelii (Benth. in Hüg. Enum. 42), ramulis subs villosis, stipulis setaceis subspinescentibus, phylemiobovatis recurvo-falcatis utrinque acutis subundubescentibus marginatis eglandulosis, nervo subcentrali ulam excurrente, pedunculis phyllodio brevioribus, parvo multifloro pubescente.—Phyllodia semipollilin. lata, rigide coriacea.—Swan River, *Hügel*, *Fraser*.

A. idiomorpha (Cunn. MSS.) ramulis subteretibus nti-villosis, stipulis setaceo-spinescentibus uncinato-, phyllodiis oblique lato-ovatis acutis undulatis marcanescenti-villosis eglandulosis, nervo subcentrali in n excurrente, pedunculis phyllodio brevioribus, capioboso multifloro.— Species stipulis distinctissima. ia semipollicaria.—Dirk Hartog's Isle, N. W. Coast, *ham.* The only head of flowers I have seen is not l to the specimen, but appears to have belonged

A. obovata (sp. n.) hispidula, ramulis striatis, stipulis mollibus persistentibus, phyllodiis obovatis oblonndulatis marginatis penniveniis nervo in mucronem nte, pedunculis gracilibus glabris phyllodia subæquancapitulis 6-8-floris glabris, calyce corolla acuminata breviore.— Species inter *Armatas* et *Uninerves ovatas* . Phyllodia 1-1½ pollicaria. Flores fere *A. bifloræ*. Leuwin, *Collie*.

A. urophylla (Benth. in Bot. Reg. 1841, Misc.), *r.* hispidula, ramulis angulato-striatis, stipulis setaescentibus, phyllodiis petiolatis dimidiato-ovatis lanre obliquis subulato-acuminatis undulatis margine superiore sæpius crenato, binerviis v. furcato-3-4-nerviis transversim venosis reticulatisque, glandula prope basin magna, pedunculis simplicibus v. breviter racemosis, capitulis paucifloris glabris.—Phyllodia in specimine culto 4-6 pollicaria late falcato-lanceolata et longissime acuminata, in Drummondianis multo breviora, latiora, brevius acuminata, rigidiora. Legumen longe et anguste lineare, crassum, crassissime marginatum, subtortum, hispidulum.—Swan River, *Drummond.*

26. *A. pyrifolia* (DC. Leg. Mem. 447), glabra, glauca, ramulis compresso-teretibus, stipulis spinescentibus, phyllodiis ovatis abrupte spinescenti-mucronatis uninerviis penniveniis, capitulis parvis multifloris racemosis.—Phyllodia usque ad 2½ poll. longa, 2 poll. lata, tenuiter coriacea. Racemi 3-4-pollicares, 10-14-cephali. Pedunculi gemini ex axilla bracteæ foliaceæ.—Australia, *Baudin's Expedition.* The above is taken from De Candolle's description. In Cunningham's collection is a fragment without flowers, collected in Dampier's Archipelago, which answers to the above character, except that the phyllodia are much smaller and more rigid.

§ 4. *Triangulares.* Caules non alati. Stipulæ nunc minutæ subnullæ, nunc setaceæ v. spinescentes. Phyllodia parva ovato-v. obovato-v. cuneato-triangularia uni-rarius plurinervia, angulo inferiore mucronato, superiore obtuso-v. acuto longioribus angulo superiore valde prominente.—Swan River, *Drummond.*

28. *A. divergens* (sp. n.) ramulis pubescentibus pilosisve vix angulatis, stipulis plerisque setaceo-spinescentibus, phyllodiis triangularibus, nervo rectiusculo margini inferiori approximato in spinulam excurrente lateralibus obscuris v. nullis, margine superiore angulo valde prominente glandulifero, pedunculis phyllodio sublongioribus, capitulis 8-12-floris, alabastro ovoideo obtuso.—Habitus et phyllodia *A. biflorœ.* Capitula et flores *A. decipientis.* Legumen *A. biflorœ.*—Vasse River, *Mrs. Molloy.*

29. *A. biflora* (Br. in Hort. Kew. ed. 3, v. 463), ramulis pubescentibus rarius glabratis vix angulatis, stipulis plerisque spinescentibus, phyllodiis triangularibus, nervo margini inferiori approximato in spinulam excurrente lateralibus obscuris v. nullis, margine superiore angulo valde prominente glandulifero, pedunculis brevibus, capitulis bifloris, alabastro acuminato.—Wendl. Diss. 10, t. 2.—Phyllodia pleraque 3 lin. longa, 2 lin. lata, rarius majora. Legumen anguste lineare, 1½ poll. longum, 1½ lin. latum, marginatum, valvulis coriaceis glabris.—King George's Sound, *Fraser, Hügel;* Vasse River, *Mrs. Molloy.*

30. *A. triangularis* (Benth. in Hüg. Enum. 42), ramulis pubescentibus vix angulatis, stipulis deciduis hinc inde spinescentibus, phyllodiis triangularibus subbinerviis, nervo margini inferiori approximato in spinulam excurrente, secundario ad angulum marginis superioris sæpius glanduliferum tendente rarius nullo, pedunculis brevibus, capitulis bifloris, alabastro obtusiusculo.—Phyllodia latiora quam longa, crassiora quam in *A. biflora,* minus spinescentia. Petala constanter breviora, latiora, et vix acuminata.—King George's Sound, *Bagster, Bauer, King.*

31. *A. hastulata* (Sm. in Rees, Cycl. Suppl.), ramulis teretibus pubescentibus v. demum glabratis, stipulis setaceis persistentibus, phyllodiis parvis crebris oblique v. subcordato-triangularibus hastatisve acuminato-pungentibus glabris, nervo subcentrali recto, angulo superiore acuto sæpius glandulifero

inferiore obtusum, pedunculis phyllodio subbrevioribus, capitulis parvis 3-5-floris, calyce corolla triplo breviore.—Bot. Mag. t. 3341. *A. cordifolia*, Hortul.—Rami virgati, dense foliati. Phyllodia 2-3 lin. longa, basi sæpe æqualiter cordiformia. Legumen lineari-falcatum, glabrum, utrinque acutum, valvulis coriaceis convexis.—King George's Sound, *Wakefield, Hügel.*

32. *A. cuneata* Benth. in Hüg. Enum. 42), ramulis angulatis hirtis glabrisve, stipulis setaceo-spinescentibus, phyllodiis cuneato-oblongis apice truncatis glabris glaucis, nervo parum excentrico superne recurvo in angulum inferiorem mucronulatum excurrente, angulo superiore plerumque acuto glandulifero, pedunculis phyllodium subæquantibus, capitulis 6-10-floris.—Phyllodia ½-1-pollicaria, apice 1½-3 lin. lata. Legumen lineare, glabrum.—Swan River, *Fraser, Hügel.*

33. *A. vomeriformis* (Cunn. MSS.), ramulis teretibus puberulis glabratisve, stipulis setaceis obsoletisve, phyllodiis triangularibus apice truncato-subbilobis, nervo margini inferiori approximato in spinulam excurrente, angulo v. lobo superiore breviore obtuso rarius glandulifero, pedunculis phyllodio subbrevioribus tenuibus glabris, capitulis multifloris, alabastro obtusissimo, calyce corolla dimidio breviore.—Forma phyllodiorum fere A. *bifloræ*, sed crassiora, rigidiora.—On the

bus lanceolatisve plurinerviis, nervo inferiore validiore margini inferiori approximato in spinulam excurrente, angulo superiore obtusissimo eglanduloso, pedunculis phyllodio brevioribus v. vix longioribus, capitulo 10-15-floro glabro.—Phyllodia 3-4 lin. longa, 1½-3 lin. lata. Sepala cuneata, demum sæpe libera, corolla dimidium superantia. Legumen lineare, planum, arcuato-contortum, valvulis subcoriaceis lævibus.—Hills west of Macquarrie river, *Fraser*; Wellington and Brisbane rivers, *Cunningham*.

36. *A. sublanata* (Benth. in Hüg. Enum. 42), junior lanata, demum glabrata, ramulis striatis, stipulis setaceis basi subdilatatis deciduis, phyllodiis late falcato-triangularibus tenuiter coriaceis plurinerviis, angulo inferiore mucronato, superiore obtuso nudo v. minute glandulifero, pedunculis phyllodio longioribus pubescentibus, capitulis dense multifloris, calyce breviter dentato corollæ dimidium æquante.—Phyllodia iis A. *decipientis* non dissimilia, sed angulus superior obtusior, et vix 4 lin. longa. Pedunculi semipollicares. Bracteolæ setaceo-acuminatæ, flores sæpe superantes. — Australia, *Bauer*.

37. *A. deltoidea* (Cunn. in G. Don, Gard. Dict. ii. 401), glabra v. junior puberula, ramulis teretibus, stipulis setaceis basi subconnatis persistentibus, phyllodiis parvis oblique ovato-triangularibus breviter mucronatis crassis plurinerviis, angulo superiore nudo v. rarissime glandulifero, pedunculis pubescentibus phyllodium subsuperantibus, capitulis dense multifloris, calyce profunde et anguste lobato.—Phyllodia formam habent fere A. *sublanatæ*, sed multo minora, crassiora. Flores in capitulo densiores, numerosiores. Calyx distinctissimus. Legumen anguste lineare, subfalcatum, valvulis coriaceis convexiusculis glabris. — North-west coast, *Cunningham*.

β.? *pungens*, tota pube tenui canescens, phyllodiis angustioribus mucrone validiore, angulo superiore sæpe glandulifero, calyce breviore.—Perhaps a distinct species.— Barren Islands, Regent's Inlet, North-west coast, *Cunningham*.

38. *A. bidentata* (sp. n.), glabra, ramulis teretibus, stipulis

minimis subrecurvis, phyllodiis parvis obovatis crassis basi obscure binerviis apice bidentatis, dente altero parvo acuto altero lato obtuso rarius glandulifero, pedunculis phyllodio longioribus, capitulis 8-15-floris, calyce sinuato-dentato corolla pluries breviore.—Ramuli rigidi, defoliati interdum spinescentes. Phyllodia raro 2 lineas superant. Pedunculi basi squamulis fuscis suffulti, interdum breviter subracemosi. —Swan River, *Drummond.*

✓ 39. *A. obliqua* (Cunn. MSS. non Don), ramulis vix angulatis pubescentibus glabratisve, stipulis minutis, phyllodiis parvis oblique obovatis orbiculatisve brevissime incurvo-mucronatis crassis glabris basi obscure 2-4-nerviis, pedunculis gracilibus phyllodio longioribus glabris, capitulis 8-10 floris.—Phyllodia 3-5 lin. longa, mucrone quam in præcedentibus multo minore nec pungente, rarius obsoleto. Species ab *A. acinacea* differt phyllodiis latis basi pluri-nec uni-nerviis, ab *A. translucenti* phyllodiis parvis latis et habitu *Triangularium.*—Between the Lachlan and Macquarrie rivers, interior of New South Wales, *Cunningham.*

§5. *Pungentes.* Caules non alati. Stipulæ setaceæ, minutæ v. obsoletæ. Phyllodia rigida, acuminato-pungentia, breviter subulato-teretia v. lineari-v. lanceolato-compressa uni-

3-4-nerviis, pedunculis capitulo multifloro vix longioribus,
lis liberis anguste spathulatis corollæ dimidium æquan-
ts.—*Mimosa cochlearis*, Labill. Nov. Holl. ii. t. 234.—
llodia subsesquipollicaria, fere *A. lanigeræ*. Pedunculi
lin. longi. Bracteæ, uti sepala, basi angustæ, apice coch-
o-dilatatæ. Legumen non vidi, sed fide Labillardière
ile est ac *A. lanigeræ*.—King George's Sound, *Wakefield*;
n River, *Drummond*; Vasse River, *Mrs. Molloy*.

2. *A. lanigera* (Cunn. in Field, N. S. Wales, 345), ramulis
ulatis pubescenti-lanatis demum teretibus glabratis visci-
s, phyllodiis lineari-lanceolatis acuminato-pungentibus
parum angustatis crassis rigidis striato-plurinerviis,
unculis brevissimis, capitulis multifloris, calyce campanu-
dentato corolla subtriplo breviore.—Bot. Mag. t. 2922.—
llodia subsesquipollicaria, 2-3 lin. lata. Pedunculi capi-
sæpius breviores. Legumen 6-8 poll. longum, lineare,
ato-subtortum, compressum, junius lanatum, maturum
udatum, longitudinaliter striatum, inter semina contrac-
, valvulis coriaceis convexis.—Common between Bathurst
the Blue Mountains, N. S. Wales, *Cunningham*, *Fraser*,
gel, *Mitchell*.

3. *A. trinervata* (Sieb. in DC. Prod. ii. 451) glabra v. vix
ior puberula, ramulis angulatis, phyllodiis linearibus crassis
dis pungenti-mucronatis utrinque 2-4-nerviis basi parum
ustatis, pedunculis tenuibus glabris, capitulis parvis
ltifloris, calyce dimidium corollæ æquante dentato v.
ato.—*A. taxifolia*, Cunn. in Field, N. S. Wales, 344.—
Cunninghamii, G. Don, Gard. Dict. ii. 404.—Phyllodia
iter pollicem longa, 1-1½ lin. lata. Pedunculi semipollicares,
tarii. Legumen longe lineare, compressum, junius pu-
ulum, demum glabrum.—Blue Mountains, eastern ascent,
ber (n. 445) *Cunningham*, *Bauer*, *Hügel*.

4. *A. genistifolia* (Link, Enum. Hort. Berol. ii. 442?)
bra, ramulis angulatis, phyllodiis linearibus rigidis pun-
ti-mucronatis subtrinerviis basi non angustatis, pedunculis
llodium æquantibus, capitulis multifloris, legumine longe
nguste lineare compresso rectiusculo glaberrimo.—*A. tri-*

nervatæ affinis sed phyllodia vix semipollice longiora et nisi nervatione iis *A. juniperinæ* subsimilia. Legumen 3-4 poll. longum, 1½ lin. latum. Flores non vidi.—Blue Mountains, *Herb. Hooker*. I am not certain of this being Link's species, only known from a very short character, but which seems rather to apply to this species than to the *A. trinervata*.

45. *A. sulcata* (Br. in Hort. Kew. ed. 3, v. 460), glabra, ramulis subangulatis, phyllodiis confertis incurvo-erectis lineari-subulatis profunde sulcato-striatis mucrone recto subpungentibus, pedunculis tenuibus phyllodio parum brevioribus, capitulis parvis multifloris, calyce corolla substriata breviore dentato, legumine lineari arcuato contorto glabro submarginato valvulis coriaceis.—Wendl. Diss. t. 10.—Bot. Reg. t. 928.—Fruticulus humilis, ramulis brevibus dense foliatis. Phyllodia subpollicaria. Squamæ ad basin pedunculorum latæ, fuscæ, concavæ, 1-1½ lin. longæ. Legumen 1½-2 lin. latum.—King's Island, *Brown*; K. George's Sound, *Wakefield*.

46. *A. colletioides* (sp. n.), glabra, ramulis subteretibus, phyllodiis divaricatis lineari-subulatis teretibus rigidis striato-plurinerviis acuminato-pungentibus, pedunculis abbreviatis, legumine lineari cochleato-contorto glabro valvulis membranaceo-coriaceis.—Phyllodia pollicaria v.-paullo longiora basi supra obscure glandulifera. Pedunculi 2 lin. longi. Flores non vidi. Legumen 2-2½ lin. latum.—Harrington plains, interior of N. S. Wales, *Cunningham*.

47. *A. striatula* (sp. n.), ramulis puberulis leviter angulatis, phyllodiis divaricatis v. recurvis breviter lineari-subulatis subcompressis rigidis acuminato-pungentibus striato-plurinerviis, pedunculis abbreviatis, capitulis parvis multifloris, sepalis liberis tenuissimis apice sphacelato-spathulatis.—Habitu ab *A. Brownei* non dissimilis, nervatione phyllodiorum *A. colletioidi* affinis, ab hoc differt phyllodiis dimidio minoribus tenuioribus plerisque recurvis Flores, *A. sphacelatæ*.—Swan River, *Drummond*.

48. *A. sessilis* (sp. n.) ramulis teretibus phyllodiisque

oribus arachnoideo-lanatis, phyllodiis confertis breviter et
le lineari-subulatis acuminato-pungentibus subcompressis
ito-plurinerviis, capitulis parvis 10-15-floris in axillis su-
oribus glomeratis sessilibus v. brevissime pedunculatis
entoso-lanatis, sepalis liberis angustissimis apice sphace-
-spathulatis.—Phyllodia semipollicaria v. paullo longiora,
to-patentia.—Swan River, *Drummond*.

** *Capitatæ, phyllodiis uninerviis.*

9. *A. siculæformis* (Cunn. MSS.), glabra, ramulis com-
sso-teretibus, phyllodiis breviter linearibus v. lineari-lan-
latis rigidis pungenti-mucronatis uninerviis aveniis nitidis
i angustatis, pedunculis capitulo multifloro longioribus.—
ticulus ramosissimus, ramulis tenuibus rigidis fuscis.
llodia 6-9 rarius 12 lin. longa.—Camden and Argyle
nties; Rocky Hills N. of Lake George, *Cunningham*.
? *bossiæoides*, pedunculo abbreviato, calyce dimidium co-
æ superante, legumine stipitato lineari plano marginato
i 6-18 lin. longo vix 2½ lin. lato, valvulis membranaceo-
aceis.—V. Diemen's Land, *Lawrence*, *Gunn*, *n.* 207.—
haps a distinct species, but Cunningham's specimens are
sufficiently advanced to establish any positive character
eparate them.

0. *A. diffusa* (Lindl. Bot. Reg. t. 632.), glabra, ramulis
ulatis, phyllodiis linearibus angustis rigidis crassis pun-
ti-mucronatis uninerviis siccitate substriatis aveniis basi
angustatis, pedunculis subgeminis capitulo 12-20-floro
-plo longioribus, calyce corolla pluries breviore.—*A. pros-*
a, Lodd. Bot. Cab. t. 631.—Phyllodia divaricata, polli-
a. Pedunculi tenues, semipollicares et longiores. Corolla
panulata 3-4-fida. Legumen 2-4-pollicare, stipitatum,
are, subfalcatum, planum, marginatum, glabrum, valvulis
nbranaceo-coriaceis.—V. Diemen's Land, *Scott*, *Gunn*. *n*.
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1. *A. cuspidata* (Cunn. MSS.) glabra, ramulis angulatis,
llodiis lineari-subulatis crassis rigidis pungenti-mucronatis
o utrinque prominente subtetragonis basi non angustatis
a basin sæpius glanduliferis, pedunculis gracilibus sub-

geminis phyllodiis brevioribus, capitulis 12-20-floris, brac teolis brevibus, calyce corolla pluries breviore.—Phyllodi divaricata, pleraque pollicaria, vix latiora quam crassa. Ova rium pubescens. Legumen non vidi.—Interior of N. S Wales, Marley's Plains, *Cunningham;* Argyle County, *Fraser* Vineyard, *Hügel.*

52. *A. asparagoides* (Cunn. in Field, N. S. Wales, 343.), glabra, ramulis subteretibus, phyllodiis lineari-subulatis crassis rigidis acuminato-pungentibus nervo utrinque prominente subtetragonis supra basin subangulato-glanduliferis nec basi attenuatis, capitulis solitariis subsessilibus multifloris, bracteolis acuminatis, calyce dimidium corollæ æquante.—Phyllodia divaricata, semipollicaria v. paullo longiora, validiora quam in *A. Brownei*, minora quam in *A. cuspidata.* Pedunculi vix unquam lineam longi.—Rare on the rocky verge of Regent's Glen, Blue Mountains, *Cunningham.*

53. *A. Brownei* (Steud. DC. Prod. ii. 449.) glabra, ramulis subteretibus, phyllodiis lineari-subulatis tenuibus rigidis acuminato-pungentibus nervo prominente subtetragonis bas non angustatis, pedunculis gracilibus phyllodium subæquan tibus, capitulis multifloris canescentibus, calyce dimidium corollæ æquante sinuato-dentato v. sepalis vix demum libe ris.—Bot. Cab. t. 1333.—*A. acicularis*, Br. in Hort. Kew. ed 3. v. 460.—Phyllodia pleraque semipollicaria. Legume anguste lineari-falcatum, 1-1½ poll. longum, compressum marginatum, glabrum, inter semina subcontractum.—Po Jackson, *Fraser*, *Cunningham*, *Sieber*, *n.* 463, *Hügel.* Scarcel differs from *A. juniperina.*

54. *A. sphacelata* (sp. n.), ramulis subteretibus puberul glabratisve, phyllodiis lineari-subulatis tenuibus rigidis acu minato-pungentibus nervo prominente subtetragonis basi no angustatis, pedunculis phyllodio multo brevioribus, capitul multifloris glabris, sepalis angustissimis liberis apice sphac lato-spathulatis corolla subtriplo brevioribus.—*A. Brown* valde affinis. Ramuli divaricati, tenues, interdum su spinescentes. Pedunculi vix 2 lin. longi. Calyx brev apice, uti bracteolæ, niger.—Swan River, *Drummond.*

5. *A. juniperina* (Willd. Spec. iv. 1049.), ramulis teretibus
escentibus, phyllodiis lineari-subulatis rigidis glabris acu-
ato-pungentibus nervo prominente subtetragonis basi
ribus, pedunculis phyllodio sublongioribus, capitulis mul-
ris, bracteolis acuminatis, sepalis subliberis corolla di-
io brevioribus.—Vent. Malm. t. 64. Bot. Cab. t. 398.—
echinula DC. Prod. ii. 449.—Phyllodia 4-6 lin. longa,
us conferta. Stipulæ interdum semilineam longæ, sæpe
letæ. Pedunculi semipollicares. Legumen 1-2-pollicare,
n. latum, stipitatum, plus minusve falcatum, planum,
rum, marginatum, inter semina sæpius contractum, val-
subcoriaceis.—N. S. Wales, *Sieber*, *n.* 447 *and* 449,
in most other collections.

6. *A. costata* (sp. n.), ramulis striatis pubescenti-lanatis,
lodiis breviter oblongo-lanceolatis rigidis acuminato-pun-
ibus, margine superiore convexo valde dilatato nervi-
i, nervo mediano valde prominente margini inferiori
usculo tenui approximato, pedunculis phyllodio longi-
us, capitulis 10-15-floris, calyce brevi profunde lobato.—
ies distinctissima. Stipulæ fere *A. juniperinæ*. Phyl-
2-3 lin. longa, 1 lin. lata, fere navicularia, costa mar-
que superiore valde prominentibus corrugatis, cæterum
errima. Calyces albo-hirti, laciniis lanceolatis acutis.
olla glaberrima.—Swan River, *Drummond*.

*** *Spicatæ*.

7. *A. ovoidea* (sp. n.), prostrata, glabra, ramulis angulato-
tis, phyllodiis divaricatis hinc inde verticillatis lineari-
latis rigidis acuminato-pungentibus nervo prominente
etragonis basi non angustatis, pedunculis phyllodio bre-
ibus, spicis ovoideis v. oblongis densis multifloris.—
ior quam *A. verticillata*, phyllodiis sæpe sparsis. Spi-
vix unquam duplo longiores quam latæ, pleræque 2-2¼
longæ. Bracteolæ acuminatæ. Ovarium tomentosum.
umen pollicare, 1½ lin. latum, vix falcatum, utrinque
iusculum, compressum, marginatum, valvulis membra-
o-coriaceis.—V. Diemen's Land, *Gunn*, *n.* 676; S. E.
tralia, *Mitchell*.

58. *A. verticillata*, (Willd. Spec. iv. 1049.) glabra v. pubescens, ramulis angulato-striatis, phyllodiis divaricatis subverticillatis lineari-subulatis lanceolatis v. oblongis rigidis mucronato-pungentibus basi subangustatis uninerviis v. rarius subtrinerviis, spicis cylindricis densis phyllodia superantibus, bracteolis acuminatis.—Vent. Malm. t. 63.—Bot. Mag. t. 110.—Bot. Cab. t. 535.—Phyllodia vix unquam semipollicaria, latitudine valde variabilia, nunc subulato-tetragona, nunc 1½-2 lin. lata. Spicæ semipollicares, rarius fere pollicares. Calyx puberulus, profunde partitus, corolla membranacea dimidio brevior. Legumen 1½-2-pollicare, lineare, subfalcatum, utrinque acutiusculum, compressum, marginatum, valvulis membranaceo-coriaceis.—V. Diemen's Land, *Gunn, n.* 204, *and* 401, *and other collections.*

β. *latifolia*, DC.—*A. ruscifolia*, Cunn. in G. Don, Gard. Dict. ii, 407.—Bot. Mag. t. 3174.—With the last.

59. *A. oxycedrus* (Sieb. in DC. Prod. ii, 453.) ramulis subteretibus pubescentibus, phyllodiis lineari-lanceolatis sparsis subverticillatisve acuminato-pungentibus basi vix angustatis rigidis elevato-3-4-nerviis glabriusculis, spicis cylindricis densis breviter pedunculatis phyllodia superantibus, bracteolis brevibus orbiculatis.—Bot. Mag. t. 2928.—Sw. Fl. Austral. t. 6.—Reichb. Icon. Exot. t. 120.—*A. taxifolia*, Lodd. Bot. Cab. t. 1225.—Phyllodia longiora et validiora quam in præcedente, rarius verticillata, in mucronem longe angustata nec ut in *A. verticillata latifolia* obtusiuscula cum mucrone. Spicæ sæpius pollice longiores.—Blue Mountains, N. S. Wales, *Cunningham, Fraser, Sieber n.* 457; Mt. William, *Mitchell.*

60. *A. Riceana* (Henslow, in Botanist.) glabra, ramulis angulatis, phyllodiis anguste linearibus subulatisve sparsis subverticillatisque acuminato-pungentibus uninerviis, spicis elongatis gracilibus dissitifloris phyllodia superantibus, bracteolis abbreviatis.—*A. setigera*, Hook. Ic. Pl. iv. t. 316.—Phyllodia 6-9 lin. longa, subrecurva. Spicæ 1-1½-pollicares. Flores glabri sæpius trimeri. Calyx brevis. Ovarium villosum.—V. Diemen's Land, *Gunn, n.* 482.

61. *A. axillaris* (sp. n.) glabra v. ramulis minute puberulis subteretibus, phyllodiis anguste linearibus subulatisve recurvis rigidis mucronato-pungentibus 1-2-nerviis, spicis brevissimis sessilibus 1-3-floris, bracteolis lanceolatis fuscis floribusque glaberrimis.—Phyllodia subpollicaria. Pedunculi bracteis parvis deciduis subtensi, nunc uniflori vix semilineam longi, nunc 1½-2 lin. longi, subtriflori. Flores *S. Riceanæ* v. paullo majores.—V. Diemen's Land, *Gunn, n.* 132.

§ 5. *Calamiformes.* Caules non alati. Stipulæ obsoletæ. Phyllodia elongata, lineari-subulata, teretia v. leviter compressa, mucrone sæpius recurvo innocuo rarius breviter pungente. Inflorescentia capitata, simplex v. breviter racemosa.—Phyllodia semipollice longiora v. rarissime paullo breviora.—I have excluded from this group two or three species with similar phyllodia, but spicate inflorescence, as they appear to have the woody pod only known as yet amongst the *Julifloræ*.

62. *A. pugioniformis* (Wendl. Diss. 38. t. 9.), glabra, ramulis subangulatis, phyllodiis strictis lineari-filiformibus nervo trinque prominente tetragonis breviter pungenti-mucrona- is, pedunculis solitariis phyllodio multoties brevioribus, capi- ulis multifloris, sepalis liberis anguste spathulatis.—*A. qua- rilateralis*, DC. Prod. ii. 451.—Phyllodia pleraque 2 poll. nga, mucrone semper recto. Variat phyllodiis tenuioribus rassioribusque.—Blue Mountains, *Cunningham*, *Sieber n.* 42; Brisbane and Logan Rivers, (phyllodia much more lender,) *Cunningham.*

63. *A. juncifolia* (sp. n.), glabra, ramulis teretibus, phyl- odiis strictis v. subpatentibus elongato-subulatis tereti-sub- ompressis enerviis v. obscure uninerviis vix striatis muticis uncinato-mucronatis, pedunculis solitariis geminisve phyl- odio multoties brevioribus, capitulis multifloris, sepalis liberis tiuscule spathulatis.—Phyllodia 3-6 poll. longa. Pedun- li 2-6 lin. longi, nunquam ut videtur racemosi. Flores *pugioniformis*, sed sepala latiora.—Interior of N. S. Wales, *nningham, Fraser, Mitchell.*

64. *A. leptoneura* (sp. n.), glabra v. junior canescenti-

puberula, ramulis subteretibus, phyllodiis strictis v. flex
subulatis tereti-subcompressis tenuissime striato-multine
muticis v. uncinato-mucronatis, pedunculis solitariis g
nisve phyllodiis multoties brevioribus, capitulis multifl
sepalis liberis anguste spathulatis.—Ramuli juniores se
mox glabrati. Phyllodia pleraque 2-pollicaria.—Swan R
Drummond.

65. *A. rigens* (Cunn. in G. Don, Gard. Dict. ii.
junior puberula demum glabra, ramulis angulatis, phyll
erecto-patentibus lineari-subulatis tereti-compressis ri
muticis v. obscure mucronatis utrinque subtrinerviis, pe
culis solitariis geminisve phyllodio multo brevioribus, capi
multifloris, calyce sinuato-dentato.—Phyllodia pleraque
pollicaria. Pedunculi breves, rigiduli. Legumen an
lineare (1½ lin. latum), contortum, inter semina leviter
tractum, puberulum, valvulis membranaceo-coriaceis.—L
lan River, Campbell's Cataract, interior of N. S. W
Cunningham. This species connects the *Calamiformes*
A. elongata.

β? *humilis*, phyllodiis magis compressis vix pollicem
dentibus.—S. W. interior of N. S. Wales, *Fraser.*

66. *A. pulverulenta* (Cunn. MSS. non Schlecht.*) gl
ramulis angulatis, phyllodiis subpatentibus subulatis unci
mucronatis tereti-compressis enerviis v. obscure venosis gl
pulverulentis, pedunculis brevissime et irregulariter race
solitariisve phyllodio multo brevioribus, calyce sinuato-
tato.—Phyllodia vix bipollicaria. Racemi sæpius 1-3-ce
pedunculo communi brevissimo, interdum in ramulos folii
abeunt pedunculis versus basin ramuli solitariis. Calyx
ciliatus. Legumen anguste lineare, crassum, glabrum,
losum, valvulis convexis.—Interior of N. S. Wales. *Mit*
near the Macquarrie, *Cunningham.*

67. *A. calamifolia* (Sweet ex Lindl. Bot. Reg. t.
glabra, ramulis subteretibus, phyllodiis elongato-sub
erectis v. sæpius incurvo-patulis apice uncinato-setiferis
aveniis compressiusculis, pedunculis breviter racemosis

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* A pulverulenta (Schlecht,) is my *Leucæna pulverulenta.*

subsolitariis, capitulis multifloris, calyce sinuato-dentato.—Bot. Cab. t. 909.—Phyllodia pleraque 3-4-pollicaria. Inflorescentia *A. pulverulentæ* nisi pedunculis gracilioribus sæpius racemosis. Legumen 4-6-pollicare, lineare, falcatum, subcompressum, inter semina valde contractum, valvulis convexis coriaceis.—Interior of N. S. Wales, *Fraser*.

68. *A. extensa* (Lindl. Bot. Reg. App. 15.) glaberrima, ramulis acute angulatis, phyllodiis longissime subulatis uncinato-mucronatis rigidulis nervo utrinque valido tetragonis infra medium glanduliferis, pedunculis axillaribus v. ad apices ramorum racemosis phyllodio multoties brevioribus, capitulis multifloris, calyce truncato subdentato.—Phyllodia sæpe semipedalia v. longiora ramuliformia. Racemi sæpius terminales, pedunculis solitariis, inferioribus phyllodio subtensis, superioribus nudis.—Swan River, *Drummond*.

69. *A. squamata* (Lindl. Bot. Reg. App. 15.) glabra, subglauca, ramulis teretibus, phyllodiis subulatis teretibus remotis ramuliformibus tenuissime striatis apice uncinatis mucronatis, racemis axillaribus 2-3-cephalis ante anthesin squamis imbricatis obtectis, capitulis plurifloris, calyce corollaque subnullis.—Hook. Ic. Pl. iv. t. 367.—Phyllodia circa 2 poll. longa. Squamæ floriferæ iis *A. suaveolentis* et *A. subcæruleæ* similes, interiores 3 lin. longæ. Capitula 6-10 flora, exacte globosa. Corollæ et calycis vestigia ad marginem disci staminiferi vix conspicua. Stamina ultra 200.—Swan River, *Drummond*.

§ 6. *Brunioideæ*. Caules non alati. Stipulæ setaceæ, minutæ, v. obsoletæ. Phyllodia brevia, verticillata v. sparsim conferta, lineari-teretia v. margine revoluto anguste linearia, enervia, mutica v. mucrone innocuo. Inflorescentia capitata simplex. — Phyllodia raro semipollicem longa.

* *Phyllodiis omnibus verticillatis.*

70. *A. lycopodifolia* (Cunn. in Hook. Ic. Pl. ii. t. 172.) pubescenti-hirta, subviscosa, ramulis teretibus, stipulis setaceis appressis, phyllodiis verticillatis minimis subulatis apice setiferis hispidis, pedunculis phyllodio longioribus, capitulis

multifloris hispidis, calyce minuto.—Frutex diffusus. Phyllo
1-2 lin. longa, in quoque verticillo usque ad 10-12, b
erecta, apice patentia, seta sæpe clavato-glandulifera. I
dunculi semipollicares. Legumen lineare, planum, recti
culum, pubescens, oligospermum. — Cambridge Gulf,
Coast, *Cunningham.*

71. *A. galioides* (sp. n.), ramulis teretibus tomento
pubescentibus, stipulis setaceis appressis, phyllodiis verti
latis parvis tenuissime subulatis apice recurvo-mucronula
puberulis, pedunculis phyllodio longioribus, capitulis mu
floris hispidis, calyce corolla ter breviore.—*A. lycopodifo*
affinis, sed minus hispida, nec (e sicco) viscidula videt
Phyllodia tenuiora usque ad 4-5 lin. longa. Pedunculi pau
breviores. Calyces proportione corollæ longiores.—Aust
lia, *Bauer.*

72. *A. hippuroides* (Heward MSS.) flavescenti-pubesce
stipulis setaceis, ramulis teretibus, phyllodiis verticill
subulatis teretibus mucronatis molliter hispidis, pedunc
phyllodio sublongioribus, capitulis 20-30-floris, calyce tenui
membranaceo corolla hispidula triplo breviore.—Species
gans, facie distinctissima, etsi præcedentibus affinis. Ph
lodia 4-5 lin. longa, in quoque verticillo 8-16.—Usborn
harbour, N. W. Coast, *Wickham.*

73. *A. Baueri* (sp. n.) ramulis teretibus minute puberu
cæterum glaberrima, stipulis minutis v. obsoletis, phyllo
verticillatis lineari-subulatis teretibus apice uncinatis obtu
mucrone minimo, pedunculis phyllodio sublongioribus,
pitulis minimis 10-20-floris glabris, calyce dimidium coro
æquante.—Phyllodia 4-5 lin. longa, crassiuscula, in quo
verticillo 5-7. Capitulum vix diametro lineam exceden
Calycis dentes acuminati.—Australia, *Bauer.*

** *Phyllodiis sparsis confertis v. subverticillatis.*

74. *A. bruniades* (Cunn. in G. Don, Gard. Dict. ii, 4
ramulis teretibus minute puberulis, stipulis minutis obs
tisve, phyllodiis confertis sparsis brevibus subulatis tereti
mucronulatis glabris, pedunculis glabriusculis phyllo
longioribus, capitulis multifloris glabris, calyce sinuato-d

tato corollæ dimidio breviore.—Habitus *Dillwyniæ ericæfoliæ*. Phyllodia 2-3 lin. longa.—Brisbane River, Mounts Lindsay and Hooker, interior of N. S. Wales, *Cunningham*.

75. *A. ericæfolia* (sp. n.), ramulis teretibus pilosis, stipulis obsoletis, phyllodiis confertis sparsis subulatis teretibus v. margine revoluto compressis obtusis laxe pilosis glabratisve, pedunculis glabris phyllodio sublongioribus, capitulis parvis multifloris, sepalis liberis anguste spathulatis.—Phyllodia 3-5 lin. longa. Pedunculi graciles, læves. Capitula multo minora quam in *A. bruniade*.—Swan River, *Drummond*.

76. *A. conferta* (Cunn. MSS.) ramulis teretibus puberulis, stipulis minutis obsoletisve, phyllodiis confertis sparsis breviter et anguste linearibus compressis margine revolutis obtusis v. vix mucronulatis subenerviis glabris hirtellisve, capitulis multifloris parvis, calyce sinuato-dentato corollæ dimidium æquante.—Phyllodia circa 3 lin. longa. Pedunculi subsemipollicares. Species hinc *A. bruniadi* hinc *A. lineatæ* affinis.—Tributaries of the Macquarrie River, N. S. Wales, *Cunningham*; also in *Bauer's* collection.

§ 8. *Uninerviæ*. Caules non alatæ. Stipulæ obsoletæ. Phyllodia uni rarius bi-nervia, ovata, oblonga, lanceolata v. linearia, reticulata-pennivenia, mutica v. mucronata nec pungentia. Inflorescentia capitata, simplex v. racemosa.

1. *Latifoliæ inflorescentia simplici.*

77. *A. sertiformis* (Cunn. in Hook. Ic. Pl. ii. t. 159.) glaberrima, ramulis teretibus, phyllodiis ovato-orbiculatis acutis undulatis marginatis minute glanduliferis basi oblique truncatis nervo valido in mucronem excurrente, pedunculis tenuibus phyllodio longioribus, capitulis multifloris. — Frutex elegans, ramis pendulis dense foliatis floribundis. Phyllodia semipollicaria, glaucescentia. Flores sæpius 4-meri. Calyx brevis. Legumen junius glabrum.—Liverpool plains, N. S. Wales, *Cunningham*.

78. *A. piligera* (Cunn. in Bot Mag. sub. n. 3394.) ramulis substriatis pedunculisque pilis patentibus hispidis, phyllodiis ovato-orbiculatis acutis undulatis marginatis minute glanduliferis basi oblique truncatis subcuneatisve, nervo valido in

mucronem excurrente, pedunculis tenuibus phyllodio longioribus, capitulis multifloris.—*A. setigera*, Hook. Ic. Pl. ii. t. 166.—*A. sertiformi* et *A. undulæfoliæ* adeo similis ut vix nisi pilorum indole differt. Legumen lato-lineare, planum, glabrum.—N. W. interior of N. S. Wales, *Cunningham*, *Fraser*.

79. *A. undulæfolia* (Cunn. in G. Don, Gard. Dict. ii. 404.) ramulis pedunculisque pilis brevibus reflexis pubescentibus, phyllodiis ovatis acutis undulatis marginatis sæpius minute glanduliferis basi oblique cuneatis glabris v. rarius puberulis, nervo valido in mucronem excurrente, pedunculis tenuibus phyllodio longioribus, capitulis multifloris.—Bot. Mag. t. 3394.—Lodd. Bot. Cab. t. 1544.—*A. uncinata*, Lindl. Bot. Reg. t. 1332.—*A. sertiformi* similis. Phyllodia sæpius minora et proportione angustiora. Legumen 1-3 poll. longum, 6-8 lin. latum, subfalcatum, brevissime stipitatum, obtusum, planum, glabrum, marginatum, valvulis coriaceis.—Interior of N. S. Wales, *Cunningham*, *Fraser*, *Mitchell*. Perhaps this and the two preceding are but varieties of one species.

80. *A. dysophylla* (sp. n.), ramulis pedunculis phyllodiisque molliter villosis, phyllodiis ovali-oblongis falcatis undulatis marginatis sæpius minute glanduliferis basi oblique cuneatis, nervo in mucronem brevem excurrente, pedunculis phyllodium æquantibus, capitulis multifloris.—Villositate et phyllodiis majoribus (8-12 lin. longis,) a præcedentibus differt.—Pine ridge near Croker's Range, interior of N. S. Wales, *Cunningham*.

81. *A. hispidula* (Willd. Spec. iv. 1054.), ramulis teretib pedunculisque hispidulis, phyllodiis oblongis falcatis ba cuneatis nervo in mucronem excurrente marginibusque ca tilagineo-denticulatis, pedunculis phyllodio dimidio brevior bus, capitulis 12-15-floris.—Lodd. Bot. Cab. t. 823.—Hoo Ic. Pl. ii. t. 161.—Phyllodia semipollicaria v. paullo major marginibus denticulatis ab omnibus distincta. Legumen o longo-lineare, planum, vix marginatum, valvulis coriaceis.— Port Jackson, *Cunningham*, *Fraser*.

82. *A. anceps* (DC. Leg. Mem. 446.) glabra ?, ramul angulato-ancipitibus, phyllodiis obovato-oblongis basi angu

tatis apice obtusis medio uninerviis, capitulis solitariis.—Phyllodia 1½ poll. longa, 8-10 lin. lata, nervo parum prominente.—New Holland E. Coast, *Baudin's expedition.*—The above character, taken from De Candolle's description agrees with *A. compressa, Cunn.* except in the venation of the phyllodia. I have not seen the plant.

83. *A. elliptica* (Cunn. MSS.) glabra, glauco-cana, ramulis vix angulatis, phyllodiis obovatis obliquis obtusissimis basi angustatis binerviis subaveniis carnosis, pedunculis solitariis phyllodio brevioribus, capitulis multifloris, calyce truncato-dentato corolla dimidio breviore.—Phyllodia 1-2 pollicaria.—Dirk Hartog's Island and Bay of Rest, N. W. Coast, *Cunningham.*

2. *Latifoliæ, capitulis racemosis multifloris, rarius 4-8-floris.*

84. *A. brachybotrya* (sp. n.), pubescens, ramulis subangulatis, phyllodiis oblique obovatis obtusissimis rarius mucronulatis marginulatis eglandulosis uninerviis, racemis tomentosis 3-5-cephalis phyllodio brevioribus, capitulis multifloris tomentosis.—Phyllodia 6-9-lin. longa. Racemi in specimine brevissimi, sed flores nondum evoluti.—Peel's range, N. S. Wales, *Cunningham.*

85. *A. podalyriæfolia* (Cunn. in G. Don, Gard. Dict. ii. 405.), tota glauco-pruinosa, raro demum denudata, tenuiter pubescens, phyllodiis ovatis obtusis oblique mucronulatis 1-2-glanduliferis, racemis phyllodio 2-3-plo longioribus, capitulis multifloris tomentosis.—*A. Fraseri*, Hook. Ic. Pl. ii. t. 171.—Phyllodia 1-1½ pollicaria, 7-9 lin lata. Racemi 2-3 poll. longi. Capitula parva, densiflora, breviter pedunculata. Calyx basi glaber, dentibus brevissimis ciliato-hispidis. Corolla profunde 4-fida.—Logan River, *Fraser*; Rocky hills near Moreton Bay, *Cunningham.*

86. *A. Caleyi* (Cunn. MSS.) molliter velutino-puberula, ramulis obtuse angulatis, phyllodiis obovali-oblongis obtusis raro submucronatis parum obliquis basi angustatis uniglandulosis, racemis polycephalis phyllodio multo longioribus, capitulis 12-20 floris tomentosis.—Phyllodia 6-8 lin. longa, circa

3 lin. lata. Racemi pollice longiores.—Under Mount Caley, N. S. Wales, *Cunningham*.

87. *A. vestita* (Ker. Bot. Reg. t. 698.) ramulis teretibus hispidis, phyllodiis falcato-ellipticis oblique aristatis undulatis basi inæqualiter cuneatis uninerviis utrinque hispidulis, racemis laxis phyllodio 2-3-plo longioribus, capitulis 10-15-floris.—Phyllodia pleraque vix semipollicaria, longiuscule aristata. Racemi laxi, 1-1½ pollicares, vix pubescentes.—N. S. Wales, *Sieber, n.* 444, *Hügel, Cunningham, Fraser*.

88. *A. cultriformis* (Cunn. in G. Don, Gard. Dict. ii. 406.) glaberrima, junior glauco-pruinosa, ramulis angulatis, phyllodiis falcato-ovatis incurvo-oblongis v. subtriangularibus coriaceis marginatis basi angustatis mucronulatis muticisve angulo superiore glandulifero, racemis polycephalis phyllodio multo longioribus, capitulis vix 20-floris.—Hook. Ic. Pl. ii. t. 170.—Phyllodia 6-9 lin. longa, rarius pollicaria, latitudine valde variabilia. Ramuli et racemi post pruinam derasam rubescunt. — Rocky ridges, Hunter's River, *Cunningham*. This species and the following, which are perhaps mere forms of one species, have the glandular angle of the phyllodia of the *Triangulares*, but the habit is so different that I have thought them better placed here, especially as they appear almost to run into the *A. oleæfolia*.

89. *A. scapuliformis* (Cunn. in G. Don, Gard. Dict. ii. 405.), glaberrima, junior glauco-pruinosa, ramulis angulatis, phyllodiis incurvo-oblongis v. falcato-triangularibus tenuiter coriaceis vix marginatis basi angustatis mucronulatis angulo superiore glandulifero, racemis polycephalis laxis phyllodio multo longioribus, capitulis 20-25 floris.—Præcedenti valde affinis. Phyllodia tenuiora, sæpius angustiora et acutiora. Capitula densiora, longius racemosa. Tota planta siccitate nigrescit.—Hunter's River, *Cunningham*.

90. *A. oleæfolia* (Cunn. in G. Don, Gard. Dict. ii. 405.), glaberrima, junior glauco-pruinosa, ramulis angulatis, phyllodiis oblique ovatis ellipticisve mucrone brevissime coriaceis tenuiter marginatis uninerviis basi inæqualiter angu

atis supra basin glanduliferis, racemis phyllodio 2-3-plo ongioribus rhachi rigido flexuoso subramoso, capitulis 4-8-loris.—*A. dealbata*, Cunn. in Field, N. S. Wales, 345 non ink.—*A. furfuracea*, G. Don, Gard. Dict. ii. 405.—Phyl-odia 6-9 lin. longa, formis latifoliis *A. lunatæ* similia sed rassiora, glandula sæpius evidentiore. Racemi iis *A. myrti-liæ* subsimiles. Flores majores quam in *A. lunata*. Legu-ien lineare 2-2½ lin. latum, rectum, planum, glauco-pruinosum nuiter marginatum, valvulis membranaceo-coriaceis.—Cu-egong and Macquarrie Rivers, N. S. Wales, *Cunningham*.

91. *A. lunata* (Sieb. DC. Prod. ii. 452.), glaberrima, ra-ulis angulatis, phyllodiis falcato-oblongis brevissime muc-natis tenuiter marginatis minute glanduliferis basi angustatis, cemis phyllodio longioribus, capitulis 4-6-floris.—Bot. Reg. 1352.—Bot. Cab. t. 384.—Sw. Fl. Austral. t. 42.—*A. bre-ifolia*, Lodd. Bot. Cab. t. 1235. (Forma phyllodiis brevibus tis.)—Phyllodia sæpius 8-12 lin. longa, 3-4 lin. lata. Ra-emi circa pollicem longi. Legumen lineare, planum, tenuiter arginatum, valvulis coriaceis. Formæ latifoliæ vix ab *A. leæfolia* diversæ.—Port Jackson, *Sieber, n.* 461, *and other ollectors.*

. *Pauciflora; phyllodiis latis v. lanceolatis, capitulis racemosis 2-4-floris.*

92. *A. celastrifolia* (sp. n.), glaberrima v. junior glauco-ruinosa, ramulis angulato-triquetris, phyllodiis oblique ovatis bovatisve calloso-mucronatis basi angustatis crasso-coriaceis arginatis infra medium glanduliferis nervo parum incurvo, acemis phyllodio paullo longioribus, capitulis brevissime edunculatis, ovario glabro.—Sequenti affinis, phyllodia multo atiora et vix incurva. Racemi usque ad 3 poll. longi, plerique 0-12-cephali.—Swan River, *Drummond*.

93. *A. myrtifolia* (Willd. Sp. iv. 1054.) glaberrima, ramulis ngulatis, phyllodiis oblique oblongis falcatisve calloso-mu-ronatis crassis marginatis nervo incurvo basi angustatis nfra medium glanduliferis, racemis phyllodiis brevioribus, vario glabro v. leviter puberulo.—Sw. Fl. Austral. t. 49.—ot. Cab. t. 772.—Phyllodia 1-2-pollicaria, plus minusve

incurva. Calyx brevissimus, truncato-dentatus. Corolla majuscula. Stamina numerosissima. Legumen 1-2-pollicare, lineare, subtortum, crasso-compressum, margine crasso, valvulis coriaceis sublignosis.—N. S. Wales, *Sieber, n.* 437, *Cunningham, Fraser, Hügel;* V. Diemen's Land, *Gunn, n.* 203.

94. *A. marginata* (Br. in Hort. Kew. ed. 3. v. 462.), glaberrima, ramulis angulatis, phyllodiis elongato-lanceolatis incurvo-falcatis utrinque acutis brevissime mucronatis crassis marginatis infra medium glanduliferis, racemis plerisque phyllodio brevioribus, ovario villoso.—Wendl. Diss. t. 5.—*A. trigona*, Alph. DC. Pl. Rar. Hort. Gen. Not. 8. 20.—Vix ac ne vix ab *A. myrtifolia* differt phyllodiis angustioribus 2-4-pollicaribus et ovario villosiore.—S. W. Coast of Australia.—I have only seen cultivated specimens raised from seeds gathered at K. George's Sound and Port Augusta. Some of the specimens of *A. myrtifolia* from the interior of N. S. Wales are almost intermediate between that species and *A. marginata.*

4. *Squamatæ; phyllodiis angustis, capitulis racemosis, racemis junioribus squamis imbricatis obtectis.*

95. *A. suaveolens* (Willd. Spec. iv. 1050.) glaberrima, ramulis triquetris, phyllodiis linearibus sublanceolatisve obtusis mucronulatis basi longe angustatis crassiusculis marginatis uninerviis prope basin minute glanduliferis, racemis brevibus, capitulis 6-10-floris, ovario glabro. — Sm. Linn. Trans. i. 253.—Labill. Nov. Holl. ii. t. 236.—Bot. Cab. t. 730.—Phyllodia 3-4 poll. longa, 2-4 lin. lata. Bracteæ squamæformes, membranaceo-striatæ, imbricatæ, jam ante anthesin deciduæ. Racemorum rhachis et pedunculi tenues, breves. Legumen oblongum, 1-1½ poll. longum, 6-8 lin. latum, planum, glauco-pruinosum, marginatum, valvulis coriaceis.—V. Diemen's Land, *Gunn, n.* 372; Port Jackson.

96. *A. angustifolia* (Wendl. Diss. 34.) or Mimosa angustifolia, Jacq. Hort. Schœnbr. 3. t. 391. appears to me only to differ from *A. suaveolens* in the hairy ovarium, a character which does not appear in all cases to be important. Th

mbricated bracts covering the young racemes, are not men-
ioned in the description, but are represented in Jacquin's
gure. I have not however seen the plant.

97. *A. subcærulea* (Lindl. Bot. Reg. t. 1075.) glaberrima,
amulis triquetris, phyllodiis oblongo-linearibus sublanceola-
sve obtusiusculis basi angustatis submarginatis crasso-cori-
eis uninerviis, racemis phyllodium æquantibus, capitulis
abris multifloris, ovario glabro.—Affinis *A. suaveolenti* et
racteæ squamæformes pariter racemos juniores obtegunt.
hyllodia 1½-2½-pollicaria, fere *A. obtusatæ*. Flores in capi-
lo ultra 30. Calyx diaphanus, tenuissimus, corolla dimidio
evior.—Point Possession, S. W. Australia, *Collie*.

Falcatæ. Phyllodiis elongatis plus minusve recurvo-falca-
tis uninerviis penniveniis, capitulis racemosis ultra-20-
floris.

98. *A. pycnantha* (sp. n.) glaberrima, nitida, ramulis tereti-
us, phyllodiis elongato-falcatis obtusis v. acutiusculis basi
petiolum longe angustatis coriaceis marginatis glandula
ajuscula a basi distante, racemis flexuosis pleiocephalis
hyllodio brevioribus, capitulis densissimis ultra 70-floris,
alyce corolla parum breviore, ovario hispidulo.—Affinis *A.*
iophyllæ, facile distinguitur floribus in capitulo sæpius fere
00, corollis e calyce ciliato breviter prominulis. Interior
f N. S. Wales, *Mitchell*.

99. *A. leiophylla* (sp. n.) glabra, nitida, ramulis angulatis
mox teretibus, phyllodiis elongato-falcatis obtusiusculis basi
n petiolum longe angustatis coriaceis marginatis, glandula a
basi distante nunc obscura, racemis flexuoso-ramosis glabris,
capitulis 20-25-floris, calyce truncato-dentato ciliolato, ovario
hispidulo.—Affinis *A. falciformi*. Phyllodia multo crassiora
venis vix conspicuis. Racemorum rhachis crassior glaber.
Capitula paullo majora. Legumen lineare, 4-6 poll. longum,
rix 3 lin. latum, planum, marginatum, inter semina non
ontractum, valvulis membranaceo-coriaceis.—K. George's
ound, *Bagster*.

100. *A. falciformis* (DC. Prod. ii. 452.) ramulis subtere-
ous phyllodiisque glabris, phyllodiis longe falcato-oblongis

obtusis basi longe angustatis marginatis tenuibus, g majuscula a basi remota, racemis polycephalis tom phyllodio brevioribus supremis paniculato-ramosis, c parvis 20-30-floris, calyce truncato-dentato ciliato hispidula dimidio breviore, ovario glabro.—*A. ast* Cunn. in G. Don, Gard. Dict. ii. 405.—Phyllodia sæp pedalia, pollicem lata. Racemi 10-15-cephali, tome vicantes. Legumen stipitatum 2-3 poll. longum, latum, obtusissimum, planum, vix marginatum, valvu aceis.—Blue Mountains, *Sieber*, *n*. 616, *Cunningham*,

β? *propinqua*, ramulis angulatis, capitulis majoribus corollaque crassioribus, ovario tomentello.—An sp. p Lachlan River, *Fraser*, *Cunningham*.

101. *A. cyanophylla* (Lindl. Bot. Reg. 1839. Mis glabra, glauco-cœsia v. pallida, ramulis vix angulatis, ph longissime oblongis v. supremis linearibus subfalcati latisve basi longe angustatis tenuiter marginatis glanduliferis, racemis brevibus oligocephalis, capitulis ultra-40-floris, calyce breviter dentato, ovario glabro mine anguste lineari.—Species pulcherrima. Phyllodia ultrapedalia, suprema semipedalia, angusta, subrecta. 3-5-cephali. glaberrimi. Capitula quam in affinibus Legumen 3-5 poll. longum, vix 2½ lin latum, planu ginatum, inter semina contractum.—Swan River, *Preiss*.

102. *A. saligna* (Wendl. Diss. 26.) from Labilla figure (Nov. Holl. ii. t. 86.) must be very near *A. cya* and is represented with one nerved phyllodia and ra heads of flowers. It is however described as having less phyllodia and solitary heads of flowers, and said native of V. Diemen's Land, from whence I have no seen any species of this group.

103. *A. falcata* (Willd. Spec. iv. 1053.) glabra, angulatis, phyllodiis longe falcatis acuminatis bas angustatis marginatis tenuibus eglandulosis v. in obscure glanduliforis, racemis polycephalis phyllodio brevioribus, capitulis parvis sub-20-floris, sepalis

spathulatis corolla dimidio brevioribus, ovario glabro, legumine lineari latiusculo.—Wendl. Diss. t. 14.—Bot. Cab. t. 1115.—Phyllodia semipedalia et longiora. Racemi omnes simplices, superiores sæpe fasciculati et phyllodiis abortientibus paniculati. Legumen *A. penninervis*.—From Port Jackson to Moreton Bay, *Sieber, n.* 450, *Cunningham, Fraser, Bauer.*

104. *A. microbotrya* (sp. n.), glabra, glauca, ramulis angulatis, phyllodiis falcato-lanceolatis utrinque longe angustatis acutis tenuiter marginatis prope basin minute glanduliferis, racemis brevibus oligocephalis, capitulis parvis dense 20-25 floris, calyce membranaceo truncato-dentato ciliato corolla dimidio breviore.—Phyllodia angustiora quam in *A. falcata*, fere semper glandula instructa 3-4 lin. a basi distante.—Swan River, *Drummond.*

105. *A. penninervis* (Sieb. DC. Prod. ii. 452.), glabra, pallida, ramulis angulatis, phyllodiis oblongis v. oblongo-linearibus acuminatis rectis v. leviter recurvo-falcatis acutiusculis basi longe angustatis marginatis, glandula majuscula a basi distante, racemis laxis subramosis, capitulis parvis sub-20-floris, calycibus truncato-dentatis, ovario glabro.—Bot. Mag. t. 2754.—*A. impressa*, Cunn. Lindl. Bot. Reg. t. 1115.—Bot. Cab. t. 1319.—Phyllodia latiora et semper acutiora quam in *A. salicina*, multo breviora quam in *A. falcata*, pleraque vix 3 poll. excedentia. Margo nerviformis tenuis; venæ penniformes, tenues, crebræ. Glandula 6 lin. circa a basi distans, phyllodio ibidem abrupte dilatato. Racemi 3 4-cephali v. superiores polycephali. Flores *A. salicinæ*. Legumen 4-5 poll. longum, 4-5 lin. latum, planum, tenuiter marginatum.—N. S. Wales, *Sieber. n.* 458, *Cunningham, Fraser.*

6. *Crassiusculæ.* Phyllodiis angustis rectis v. incurvis rarius subfalcatis, uni-rarius bi-nerviis penniveniis v. subaveniis, capitulis racemosis multifloris, rarius 8-10 floris.

106. *A. salicina* (Lindl. in Mitch. E. Austr. ii. 20.), glabra, pallida, ramulis subangulatis, phyllodiis linearibus v. oblongo-lanceolatis obtusis muticis acuminatisve basi longe angustatis immarginatis rectis v. parum incurvis vix obscure glanduli-

feris uninerviis tenuiter reticulato-penniveniis, racer
vibus laxis oligocephalis, capitulis sub-20-floris, c
truncatis, ovario glabro.—*A. hakeoidi* et *A. pennin*
nis. Phyllodia 2-5 poll. longa, 2-6 lin. lata, colore
sistentiæ *A. penninervis*. Pedunculi divaricati. Ca
nime ciliatus.—Near the Lachlan River, interior
Wales, *Mitchell*, *Cunningham*.

107. *A. hakeoides* (Cunn. MSS.) glabra, ramulis s
latis, phyllodiis lineari-spathulatis obtusis sæpius mut
longe angustatis crassiusculis vix marginatis versus
glanduliferis uninerviis obscure reticulato-venosis,
phyllodio brevioribus, capitulis sub-20-floris, sepali
beris spathulatis, ovario glabro.—Phyllodia 2-5 pol
2-6 lin. lata, obtusiora quam in *A. crassiuscula*, tenui
angustiora et minus marginata quam in *A. obtusat*
incurva quam in *A. gladiiformi*, glandula semper s
crassiora quam in *A. penninervi* et semper obtusa.
juniora connata, per anthesin facillime secedentia.—
and Dumaresq Rivers, N. S. Wales, *Cunningham*.

108. *A. gladiiformis* (Cunn. MSS.), glaberrima,
angulatis, phyllodiis longe lineari-lanceolatis spath
incurvo-arcuatis obtusis mucronulatis basi longe an
crassis marginatis nitidis uninerviis, venis obscuris, g
2-5, racemis phyllodio brevioribus, capitulis multiflor
imbricatis, sepalis spathulatis ciliatis, ovario glabro.—
rigida, lævis, siccitate rubescens. Phyllodia 3-5-p
Racemi rhachis rigida, flexuosa. Legumen lineare,
flexuosum, marginatum, valvulis coriaceis.—Rocky
terior of N. S. Wales, *Cunningham*.

109. *A. obtusata* (Sieb. DC. Prod. ii. 453.), gla
ramulis angulatis, phyllodiis oblongo-linearibus spat
obtusis vix mucronulatis basi longe angustatis crassi
marginatis versus medium sæpe glanduliferis unine
inconspicuis, racemis phyllodio multo brevioribus
phalis, capitulis dense multifloris, calycibus corollis
siusculis, ovario glabro.—Species rigida, stricta, sub
cens. Phyllodia 1½-3-pollicaria, 3-5 lin. lata. Ca

racemo 2-4, floribus ultra 20.—Elevated parts of the Blue Mountains, *Cunningham*, *Fraser*, *Sieber*, *n.* 441.

110. *A. bivenosa* (DC. Leg. Mem. 448.) glabra, phyllodiis oblongis obtusis basi subangustatis glaucis sublævibus basi tenuissime binerviis, capitulis laxe racemosis longe pedunculatis, racemis phyllodio longioribus, floribus 5-fidis.—Phyllodia 12-15 lin. longa, 3-4 lin. lata.—East Coast, *Baudin's Expedition.*—The above character is taken from De Candolle, as I have not seen the plant; I should have taken my *A. xanthina* for this species but that the two veins are said by De Candolle to be obscure, which leads me to think that it may possibly belong to the *Multinerviæ*, besides that the *A. bivenosa* is said to come from the East Coast, and *A. xanthina* is a Swan River plant.

111. *A. xanthina* (sp. n.), glaberrima, glauco-cœsia, apice aurea, phyllodiis oblongo-lanceolatis mucrone calloso v. glandula obliqua subuncinatis basi angustatis et obscure glanduliferis marginatis binerviis reticulato-penniveniis, racemis phyllodio longioribus, capitulis multifloris, calyce sinuato-dentato.—Phyllodia 2-2½ poll. longa, 4-6 lin. lata, marginibus nerviformibus nervisque aureis. Racemi ad apices ramorum paniculati, glaberrimi, aurei. Capitula majuscula, sub-30-flora, bracteolis abbreviatis.—Swan River, *Drummond.*

112. *A. rubida* (Cunn. in Field, N. S. Wales, 344.) glaberrima, ramulis angulatis, phyllodiis elongato-lanceolatis acutis breviter calloso-mucronulatis rectis v. leviter falcatis crassiusculis basi longe angustatis uninerviis tenuiter marginatis, venis inconspicuis, glandula a basi distante, racemis phyllodio plerisque brevioribus, capitulis parvis 10-20-floris ovarioque glabris.—*A. amœna*, Sieb. Pl. ex., non Wendl.—Planta siccitate rubescit. Phyllodia pleraque 3-poll. longa, 4-6 lin. lata. Racemi numerosi, 10-12-cephali. Pedunculi 2-3 lin. longi. Rami inferiores etiam floriferi folia sæpe ferunt bipinnata, petiolis pubescentibus, glandula basilari immersa, jugalibus nullis, pinnis 4-7-jugis, foliolis 10-15-jugis oblongo-falcatis mucronulatis crassiusculis glabris subciliatis.—Blue Mountains, *Cunningham*, *Sieber*, *n.* 452.

113. *A. amœna* (Wendl. Diss. 16. t. 4.), glabra, ramulis angulatis, phyllodiis oblique lanceolatis rectiusculis uncinato-mucronatis basi longe angustatis marginatis plerisque 2-3-glanduliferis nitidis uninerviis venis tenuibus, racemis phyllodio subbrevioribus, capitulis parvis 8-12-floris glabris, ovario glabriusculo.—Phyllodia 1½-2½-pollicaria, glandulis sæpissime 2, a basi et inter sese distantibus.—Near the Lachlan and Macquarrie Rivers, *Fraser*, *Cunningham*.

114. *A. rostellifera* (sp. n.), glaberrima, subglaucescens, ramulis angulatis, phyllodiis lineari-lanceolatis apice mucrone recurvo v. glandula obliqua uncinatis basi angustatis uninerviis crassiusculis immarginatis venis obscuris, glandula obscura a basi distante, racemis oligocephalis phyllodio brevioribus supremis subpaniculatis, capitulis sub-20-floris, calyce truncato tenui nudo.—Phyllodia pleraque 3 poll. longa, 3 lin. lata. Habitu et colore *A. xanthinæ* accedit, phyllodia iis *A. crassiusculæ* similiora.—Swan River, *Drummond*.

115. *A. crassiuscula* (Wendl. Diss. 31. t. 8.), glaberrima, junior subglaucescens, ramulis angulatis, phyllodiis linearibus brevissime mucronatis basi longe angustatis crassiusculis submarginatis uninerviis venis obscuris, glandula a basi parum distante, racemis phyllodio brevioribus, capitulis sub-20-floris, calyce truncato-dentato crassiusculo ciliato.—Phyllodia 1½-2-pollicaria, 1⅓-2 lin. lata, multo crassiora et rigidiora quam in *A. linifolia*, angustiora quam in *A. rostellifera*. Racemi 3-5-cephali. Ovarium glabrum v. tomentosum. Legumen lineare, 2-2½ lin. latum, planum, crassiusculum, glabrum, inter semina contractum, valvulis coriaceis.—Blue Mountains, N. S. Wales, *Sieber*, *n.* 464, *Cunningham*, *Fraser*, *Mitchell*.

β. adunca, phyllodiis longioribus, (usque ad 4 poll.), glandula a basi remotiore.—A. adunca, Cunn. in G. Don, Gard. Dict. ii. 406.—Hunter's River, *Cunningham*.

116. *A. ramosissima* (sp. n.), glabra, junior subglaucescens, ramulis angulatis, phyllodiis anguste linearibus obtusis mucronulatisve basi longe angustatis crassis immarginatis uninerviis eglandulosis v. glandula rarius unica a basi distante, racemis brevibus 2-3-cephalis, capitulis dense multifloris

sepalis liberis angustissimis apice sphacelato-spathulatis.—Phyllodia 2-3-pollicaria, rigida, lineam lata, nervo vix prominente. Legumen lineare, 3 poll. longum, 2 lin. latum, rectum, planum, glabrum, tenuiter marginatum, inter semina subcontractum.—Species forte *Calamiformibus* affinior, sed phyllodia, præsertim superne, plana.—Swan River, *Drummond;* K. George's Sound, *Bagster.*

117. *A. neriifolia* (Cunn. MSS.) ramulis subangulatis phyllodiisque junioribus tomento farinoso albidis demum glabratis, phyllodiis elongato-lanceolatis linearibusve subfalcatis calloso-mucronatis basi longe angustatis crassiusculis vix marginatis uninerviis venis obscuris, glandulis 1-3 obscuris, racemis tomentosis phyllodio brevioribus, capitulis parvis dense multifloris, sepalis distinctis spathulatis, ovario tomentoso. — Phyllodia 2-3-pollicaria.—Liverpool Plains, N. S. Wales, *Cunningham, Fraser,* also amongst *Bauer's* collections. — Perhaps notwithstanding the very narrow leaves, this species should be placed amongst the *Falcatæ.*

118. *A. subulata* (Bonpl. Pl. Malm. 110. t. 45.), glabra, junior subglaucescens, ramulis angulatis, phyllodiis longe et anguste linearibus mucronulatis basi angustatis vix marginatis uninerviis planis glandula obscura, racemis phyllodio brevioribus, capitulis parvis 12-20-floris, calyce membranaceo sinuato-dentato.—Phyllodia 3-6 poll. longa, vix lineam lata. Ovarium glabrum v. villosum.—Hunter's River, *Cunningham.*

119. *A. linifolia* (Willd. Spec. iv. 1051.) glabra, ramulis angulatis subtriquetris, phyllodiis breviter et anguste linearibus subulatisve utrinque acutis tenuibus nitidulis tenuissime marginatis uninerviis glanduliferis, racemis phyllodio sublongioribus, capitulis parvis 8-12-floris, ovario glabro.—Vent. Hort. Cels. t. 2.—Bonpl. Hort. Malm. t. 16.—Bot. Mag. t. 2168.—Bot. Cab. t. 383.—*A. abietina,* Willd. Spec. iv. 1051.—Phyllodia 1-1½ poll. longa, 1-2 lin. lata.—Port Jackson.

120. *A. prominens* (Cunn. in G. Don, Gard. Dict. 2. 406.) ramulis angulato-triquetris phyllodiisque margine tenuissime puberulis, cæterum glabra, phyllodiis lineari-lanceolatis utrinque acutis tenuibus nitidulis tenuissime marginatis uniner-

viis penniveniis glanduliferis, racemis phyllodio sublongioribus, capitulis parvis 8-12-floris, ovario glabro.—Bot. Mag. t. 3502.—*A. fimbriata*, Cunn. l. c.—Vix non var. latifolia *A. linifoliæ*.—N. S. Wales, *Cunningham and others*.

121. *A. decora* (Reichb. Icon. Exot. t. 199.) ramulis angulatis phyllodiisque glabris junioribus glauco-pruinosis, phyllodiis lanceolatis acutiusculis mucronulatis basi angustatis tenuiter marginatis crassiusculis uninerviis penniveniis uniglanduliferis, racemis phyllodio longioribus, capitulis sub-20-floris pedunculisque tomentellis.—Affinis *A. buxifoliæ* et *A. amœnæ*. Phyllodia 1-1½-pollicaria, sæpe conferta. Racemi 2-3-pollicares, 6-10-cephali. Legumen (in specimine junius) lineare, subarcuatum, planum, glabrum.—Liverpool Plains, N. S. Wales, *Cunningham*, *Fraser*.

122. *A. buxifolia* (Cunn. in Field, N. S. Wales, 344.) glaberrima, ramulis angulatis, phyllodiis brevibus oblongis lanceolatisve subfalcatis utrinque acutis tenuiter marginatis sæpius obscure glanduliferis crassiusculis uninerviis venis obscuris, racemis phyllodia vix excedentibus, capitulis glaberrimis 8-12 floris.—Hook. Ic. Pl. ii. t. 164.—*A. papulæformis*, Cunn. in G. Don, Gard. Dict.—Affinis *A. decoræ* et *A. lunatæ*. Ramuli tenues, dense foliati. Phyllodia 7-10 lin. longa, circa 2 lin. lata. Racemi 4-8-cephali. Legumen latiuscule lineare, planum, glabrum, inter semina subcontractum, valvulis membranaceo-coriaceis. — Blue Mountains, *Cunningham*, *Fraser*, *Hügel*.

7. *Angustifoliæ, inflorescentia simplici.*

123. *A. triquetra* (sp. n.) glabra, ramulis angulato-triquetri phyllodiis brevibus linearibus obtusis muticis v. minut mucronulatis basi angustatis nervo subcentrali, peduncul phyllodium raro excedentibus, capitulis parvis 12-20-flori calyce corolla duplo breviore.—Ab. *A. lineato*. differt gl britie et ramulis angulatis, ab *A. acinacea* phyllodioru forma. Phyllodia 6-8 lin. longa. Legumen longe et angust lineare, compressum, tenuiter marginatum, arcuatum, gl brum, valvulis membranaceo-coriaceis.—K. George's Soun *Bagster*.

124. *A. flexifolia* (Cunn. MSS.), ramulis teretibus v. obtuse angulatis tomento brevissimo incanis, phyllodiis glabris pallidis linearibus obtusis submuticis basi angustatis supra basin sæpius glanduliferis et ibidem geniculatis, nervo margini superiori approximato, pedunculis brevissimis albo-tomentosis, capitulis parvis 6-8-floris, calyce corolla 3-4-plo breviore.—Phyllodia 6-8 lin. longa, vix lineam lata.—Interior of N. S. Wales, *Cunningham*.

125. *A. dasyphylla* (Cunn. MSS.), ramulis subteretibus phyllodiisque pubescentibus subviscidis, phyllodiis anguste linearibus apice oblique acutis et minute glanduliferis basi angustatis, nervo margini superiori contiguo v. cum eo confluente, pedunculis tenuibus phyllodio brevioribus, capitulis parvis 10-15-floris, calyce corolla dimidio breviore.—Phyllodia semipollicaria, vix unquam lineam lata. Species hinc *Brunioideis*, hinc *A. lineatæ* affinis.—Lachlan River, N. S. Wales, *Cunningham*.

126. *A. lineata* (Cunn. in G. Don, Gard. Dict. ii. 403.), ramulis subteretibus minute puberulis villosisve, phyllodiis subresinosis glabris puberulisve linearibus apice uncinato-acutis marginatis, basi inæqualiter angustatis, nervo excentrico, pedunculis tenuibus phyllodio brevioribus, capitulis parvis 13-15-floris, calyce corolla dimidio breviore.—Bot. Mag. t. 3346.—*A. runciformis*, Cunn. in G. Don, Gard. Dict. ii. 404.—Phyllodia 6-8 lin. longa, linea raro latiora, glandula apicali obscura vel nulla. Legumen 1-2 poll. longum, anguste lineare, compressum, tenuiter marginatum, arcuato-subtortum, glabrum v. puberulum. — Interior of N. S. Wales, *Cunningham*, also in *Bauer's* collection.

127. *A. acinacea* (Lindl. in Mitch. E. Austr. ii. 267.), glabra, subresinosa, ramulis angulatis, phyllodiis oblique oblongis subfalcatis obtusis apice minute glanduliferis basi angustatis marginatis nervo subcentrali juxta glandulam in mucronem brevissimum excurrente, pedunculis gracilibus phyllodio sublongioribus, capitulis parvis 12-20-floris.—Ramuli virgati. Phyllodia conferta, 3-6 lin. longa. Pedunculi sæpius 2-4 e gemmula axillari orti, bracteis fuscis

deciduis suffulti. — Near Mount-William, N. S. Wales, *Mitchell.*

✓ 128. *A. erinacea* (sp. n.), glabra, ramulis striatis spinescentibus, phyllodiis parvis oblique obovato-oblongis obtusis vix mucronulatis crassiusculis rigidis obscure uninerviis, pedunculis brevibus, capitulis parvis 12-20-floris.—Species a cæteris hujus sectionis ramulis rigide spinosis distinctissima. Phyllodia 3-4 lin. longa, hinc *A. acinaceæ*, hinc *A. obliquæ* affinia. Capitula glaberrima. Flores læves. Calyx corolla pluries brevior, truncato-dentatus. — Swan River, *Drummond.*

129. *A. densifolia*, ramulis substriatis phyllodiisqe pubescenti-hirtis subresinosis, phyllodiis linearibus v. oblongo-linearibus obtusis mucrone brevissimo recurvo marginatis basi angustatis uninerviis, pedunculis crassis villosis capitulo multifloro brevioribus, bracteolis corolla brevioribus. — *A. strigosa*, Lindl. in Mitch. E. Austr. ii. 185. non Link.—*A. asperæ* affinis. Phyllodia 6-9 lin. longa, eglandulosa. Pedunculi 1-3 lin. longi. Legumen anguste lineare (bipollicare), flexuoso-contortum, compressum, vix marginatum, hirtum, valvulis membranaceo-coriaceis demum convexis. — Near the Wimmera River, N. S. Wales, *Mitchell.*

130. *A. aspera* (Lindl. in Mitch. E. Austr. ii. 139.) ramulis angulato-striatis phyllodiisque hinc inde puberulis punctisque resinosis asperulis, phyllodiis oblongo-linearibus obtusiusculis submucronatis marginatis subfalcatis basi angustatis uninerviis, pedunculis crassis pubescentibus, bracteolis acuminatis corollam æquantibus.—Ramuli robusti, breves, dense foliati. Phyllodia pleraque pollicaria. Pedunculi semipollicares. Flores puberuli.—On the Murray River, *Mitchell.*

✓ 131. *A. montana* (sp. n.), viscosissima, ramulis subang latis pedunculisque pubescentibus, phyllodiis oblongis oblongo-lanceolatis obtusissimis vix calloso-mucronatis ba angustatis glabris binerviis, pedunculis brevibus, bracte baseos brevissimis fuscis, capitulis parvis multifloris.—Affin *A. exsudanti.* Phyllodia obtusiora, breviora, (1-1½-pollicari nervis obscurioribus. Pedunculi tenuiores, bracteis base minoribus. Capitula multo minora.—Highlands near the Liverpool Plains, N. S. Wales, *Fraser*.

132. *A. exsudans* (Lindl. in Mitch. E. Austr. ii. 216.), viscosa, ramulis angulato-striatis junioribus subtomentellis, phyllodiis oblongo-lanceolatis utrinque angustatis calloso-mucronatis binerviis, pedunculis brevibus cano-villosis, bracteis baseos majusculis deciduis, capitulis multifloris, bracteolis corollam subæquantibus. — Robustior quam *A. verniciflua*, phyllodiis sæpius brevioribus latioribus. Pedunculi 3-5 lin. longi. Stipulæ parvæ, recurvæ, deciduæ. Bracteæ ad basin pedunculorum sæpe ultra lineam longæ. — Plains of the Glenelg, interior of N. S. Wales, *Mitchell*.

133. *A. verniciflua* (Cunn. in Field, N. S. Wales, 344), glabra, viscosissima, ramulis angulatis, phyllodiis lineari-v. oblongo-lanceolatis utrinque angustatis acutis calloso-mucronatis subfalcatis margine raro glanduliferis binerviis v. rarius subuninerviis venis obscuris, pedunculis brevibus, capitulis multifloris.—Bot. Mag. t. 3266.—*A. graveolens* Cunn. in G. Don Gard. Dict. ii. 404.—Bot. Cab. t. 1460.—Bot. Mag. 3279.—*A. virgata* Lodd. Bot. Cab. t. 1246.—Phyllodia 2-4 poll. longa, 2-4 lin. vel rarius sub 6 lin. lata, magis divaricata et acutiora quam in sequentibus. Calycis dentes ciliatæ. Bracteæ ad basin pedunculorum minimæ. Legumen lineare, rectum, subplanum, glabrum, marginatum, valvulis coriaceis.—N. S. Wales, *Cunningham*. *Fraser*, *Hügel*; V. Diemen's Land, *Gunn*, *n.* 479.

134. *A. leprosa* (Sieb. in DC. Prod. ii. 450,) ramulis angulatis apice minute tomentellis mox glabratis, phyllodiis anguste lineari-lanceolatis calloso-mucronatis glabris viscoso-punctatis basi angustatis margine raro glandulifero uninerviis tenuiter reticulato-penniveniis, pedunculis cano-tomentosis capitulum multiflorum subæquantibus.—Bot. Reg. t. 1441.—Pedunculis canescentibus primo intuitu a sequentibus distinguitur. Affinis præsertim *A. dodoneæfoliæ*, sed phyllodia tenuiora, venis multo tenuioribus. Calyx pubescens.—N. S. Wales, *Sieber n.* 455.

135. *A. dodoneæfolia* (Willd. Enum. Suppl. 68.) glabra,

resinoso-viscosissima, ramulis angulatis mox teretibus, phyllodiis longe et latiuscule linearibus apice obtusis brevissime recurvo-mucronatis basi longe angustatis margine superiore remote 2-3-glandulifero rarius eglanduloso, nervo medio prominente, venis paucis anastomosanti-pinnatis, pedunculis tenuibus capitulo multifloro longioribus.—*A. viscosa* Wendl. Diss. 30. t. 7.—*A. strictæ* similis quidem sed certe distincta phyllodiorum venatione et pedunculis ultrasemipollicaribus; multo etiam viscosior est.—I have only seen wild specimens of this species in *Bauer's* collection, but it is not uncommon in gardens, confounded with *A. stricta.*

136. *A. stricta* (Willd. Spec. iv. 1052.) glabra, subresinosa, ramulis angulatis, phyllodiis longe et latiuscule linearibus apice obtusis v. retuso-glanduliferis rarius obsolete mucronatis basi longe angustatis margine sæpe glanduliferis uninerviis creberrime et tenuiter penniveniis, pedunculis capitulo multifloro subbrevioribus.—Bot. Rep. t. 53.—Bot. Mag. t. 1121.—Bot. Cab. t. 99.—*A emarginata* Wendl. Diss. 27.—Phyllodia 3-4-pollicaria, latiora et obtusiora quam in *A. dentifera.* Species, etsi variabilis, venulis crebris facile distinguitur.—N. S. Wales, *Sieber n.* 456 *and others.*—V. Diemen's Land, *Gunn,* n. 205, 478 and 801.

137. *A. ligulata* (Cunn. MSS.) glabra, vix viscidula, ramulis angulatis, phyllodiis oblongo-linearibus obtusis recurvo-mucronulatis basi angustatis margine raro glanduliferis uninerviis venis obscuris, pedunculis brevibus, legumine crasso compresso sublignoso.—Phyllodia breviora crassiora quam in *A. dodoneæfolia,* 1½-2 poll. longa. Flores non vidi. Legumen 2-3-pollicare, rectiusculum, 3 lin. latum.—Dirk Hartog's Island, W. Coast, *Cunningham,* S. Coast, *Fraser.* In Bagster's K. George's Sound collection is an imperfect specimen which may be a long-leaved variety of this species.

138. *A. erythrocephala* (Cunn. MSS.), ramulis striatis phyllodiisque pubescenti-hirtis resinosis, phyllodiis anguste linearibus apice oblique mucronato-acutis basi angustatis uninerviis, pedunculis phyllodio multo brevioribus.—Phyllodia 1-2-pollicaria. Capitula juniora subsessilia, fasciculata,

acteolis comosa.—Lachlan River, N. S. Wales, *Cunning-am.*

139. *A. dentifera* (Benth. in Botanist, iv. t. 179,) glabra, mulis angulato-striatis, stipulis minutis dentiformibus soletisve, phyllodiis longe et anguste linearibus acutis tusisve submucronatis basi breviter angustatis uninerviis, dunculis tenuibus phyllodio multo brevioribus axillaribus cemosisve, racemis demum foliatis. — Phyllodia 3-5-polliria, sæpe vix linea latiora. Inflorescentia primo juventute cemosa, racemi tamen per anthesin in ramos foliiferos currunt.—Swan River, *Drummond.*

9. *Brachybotryæ.* — Caules teretes angulati v. ancipites, phyllodiis non decurrentibus. Stipulæ obsoletæ. Phyllodia tri-multi-nervia, venis reticulato-parallelis, oblonga lanceolata v. linearia, mutica v. mucronata nec pungentia. Inflorescentia capitata, subsimplex v. sæpius breviter racemosa.

140. *A. elongata* (Sieb. in DC. Prod. ii. 451), ramulis gulatis pedunculisque puberulis demum glabratis, phyldiis elongato-linearibus crassis rigidis muticis v. brevissime curvo-mucronatis utrinque trinerviis striatis basi angustis, pedunculis subgeminis v. brevissime racemosis capitulo 3-plo longioribus, capitulis dense multifloris, bracteolis athulatis corolla brevioribus.—Bot. Mag. t. 3337.—Affinis inc *A trinervatæ* (inter *Pungentes*) a qua differt phyllodiis 4-poll. longis non pungentibus, hinc sequentibus etsi yllodia multo angustiora profundius striata.—Blue Mounins, *Sieber* n. 443, *Cunningham*, *Hügel*, &c.

β? *hebecephala*, rigidior, capitulis densis puberulis, floribus merosioribus. An species propria?—Camden and Argyle unties, *Cunningham*, Twofold Bay, *Hügel*.

141. *A. viscidula* (sp. n.), viscoso-puberula, ramulis anguis mox teretibus, phyllodiis anguste linearibus breviter urvo-mucronatis subincurvis coriaceis multinerviis basi gustatis, pedunculis subgeminis pubescentibus capitulo coso-pubescente brevioribus, bracteolis acuminatis corollam uantibus.—Phyllodia 2-2½ poll. longa, 1-1½ lin. lata, te-

nuiora latiora et tenuius striata quam in *A. elongata var. β* cui cæterum hæc species affinis est. Pedunculi bracteis anguste lanceolatis 1-2 lin. longis suffulti.—Banks of the Lachlan River, N. S. Wales, *Fraser*.

142. *A. ixiophylla* (sp. n.), ramosissima, glabra v. minute pubescens, viscosa, phyllodiis anguste oblongo-lanceolatis subfalcatis obtusis apice oblique et minute mucronulatis v. glanduliferis tenuiter multinerviis basi angustatis, pedunculis puberulis brevissime racemosis solitariisve, capitulis sub-20-floris.—Phyllodia subpollicaria, fere 2 lin. lata, subcoriacea at multo tenuiora quam in *A. sclerophylla*. Racemi plerique 2-3-cephali.—N. of Liverpool plains, N. S. Wales, *Cunningham*.

143. *A. translucens* (Cunn. in Hook. Ic. Pl. ii. 160) glabra v. junior pubescens, pallida, ramulis angulatis, phyllodiis oblique obovatis oblongisve incurvis undulatis basi angustatis obscure multinerviis, junioribus apice recurvo translucenti-glandulosis, adultis opacis apice glanduliferis, pedunculis solitariis phyllodio longioribus, calyce brevissime dentato.—Phyllodia pleraque semipollicaria, flexuosa. Pedunculi rigidi, subpollicares. Corolla rigidula, striata.—Montague Sound, N. W. Coast, *Cunningham*.

β *humilis*, ramulis vix angulatis, phyllodiis latioribus, corollis longioribus. Bay of Rest, N. W. Coast, *Cunningham*.

γ? *oblonga*, phyllodiis anguste oblongis vel linearibus recurvis.—Legumen immaturum lineare, crassiusculum, marginatum, apice uncinatum.—N. W. Coast, *Bauer*. Perhaps a distinct species.

144. *A. sclerophylla* (Lindl. in Mitch. E. Austr. ii. 139) ramosissima, glabra, ramulis subteretibus, phyllodiis oblongo-linearibus obtusis mucronulatis basi angustatis subfalcatis crasso-coriaceis striato-multinerviis, capitulis subgeminis breviter pedunculatis multifloris glabris.—Phyllodia 6-9 lin. longa, rigida, 1-1½ lin. lata. Capitula (nondum expleta) subsessilia, bractea lanceolata concava membranacea subtensa.—On the Murray River, *Mitchell*.

145. *A. farinosa* (Lindl. in Mitch. E. Austr. ii. 146,) glabra (capitulis exceptis) v. junior glauco-pruinosa, ramulis teretibus, phyllodiis lineari-cuneatis incurvis obtusis oblique mucronulatis, basi longiuscule angustatis crasso-coriaceis striato-multinerviis, capitulis 12-20-floris axillaribus geminis v. breviter racemosis pedunculisque brevibus tomento brevissimo albis.—Phyllodia pollicaria v. raro subbipollicaria, 1-1½ lin. lata. Capitula numerosa parva. Flores in specimine nondum aperti.—On the Murray River, N. S. Wales, *Mitchell.*

146. *A. multinervia* (DC. Leg. Mem. 445), humilis, ramosissima, glabra, ramulis teretibus, phyllodiis lineari-lanceolatis falcato- divaricatis recurvo-mucronulatis basi angustatis rigidis striato-multinerviis glandula impressa a basi distante, capitulis glabris multifloris brevissime pedunculatis solitariis geminisve.—Phyllodia 1-1½-pollicaria, rarius longiora. Calyx membranaceus, corollæ dimidium æquans.—N. S. Wales, *Mitchell.* I have referred this plant to De Candolle's species as being the only one of this section in which I have observed the marginal gland.

147. *A. eglandulosa* (DC. Leg. Mem. 445,) phyllodiis lineari-lanceolatis basi angustatis utrinque integerrimis eglandulosis basi submultinerviis, capitulis solitariis, pedunculis capitulo sublongioribus.—Affinis *A. multinerviæ,* sed nervi minus conspicui, etiam *A. cochleari* sed phyllodia glabra.—The above character taken from De Candolle, will nearly apply to several species of this section, but is not sufficient to determine the plant exactly. It was gathered in Baudin's Expedition.

148. *A. omalophylla* (Cunn. MSS.), glabra, pallescens, ramulis angulatis mox teretibus, phyllodiis oblongo-linearibus subfalcatis obtusis brevissime mucronulatis basi angustatis crasso-coriaceis rigidis enerviis v. obscure multinerviis, pedunculis geminis v. breviter racemosis puberulis, capitulis dense multifloris.—Phyllodia 1-1½ pollicaria, superficie oculo nudo lævi. In hac et sequente specie phyllodia ima basi

tuberculo marginali notata sunt loco glandulæ.—Lachlan River, *Cunningham.*

✓ 149. *A. pendula* (Cunn. in G. Don, Gard. Dict. ii. 404.), tomento brevissimo cinerascens, ramulis angulatis mox teretibus, phyllodiis lineari-lanceolatis falcatis acuminatis incurvo-mucronulatis basi longe angustatis crasso-coriaceis rigidi enerviis v. obscure plurinerviis, pedunculis pubescentibus brevissime racemosis, capitulis parvis 12-20-floris.—*A. leucophylla* Lindl. in Mitch. E. Austr.—Phyllodia 2-3-pollicaria. Legumen lato-lineare, planum, arcuatum, alato-marginatum cinerascens.—Lachlan River, *Cunningham*, *Mitchell.*

✓ 150. *A. coriacea* (DC. Leg. Mem. 446), pube tenuissima adpressa cinerascens, ramulis teretibus, phyllodiis elongato-linearibus subarcuatis obtusiusculis basi longe angustatis crasso-coriaceis tenuissime multinerviis, pedunculis brevibus, legumine moniliformi striato. — Phyllodia semipedalia et longiora, 2-2½ lin. lata, oculo nudo enervia, sub lente tenuiter et dense striato-multinervia. Legumen 6-9-poll. longum, lineare, arcuatum v. tortum, cinerascens, pseudoarticulis pollicem longis 4-5 lin. latis, valvulis coriaceis convexis.—N. W. Coast, Bay of Rest and Dirk Hartog's Isle, *Cunningham.* I have not seen the flowers.

✓ 151. *A. stenophylla* (Cunn. MSS.) glabra, ramulis angulatis, phyllodiis longissimis linearibus acuminatis basi longe angustatis tenuiter coriaceis striato-multinerviis, pedunculis solitariis v. brevissime racemosis, capitulis multifloris puberulis.—Phyllodia 8-10 poll. longa v. fere pedalia, 2-2½ lin. lata, nequaquam canescentia et oculo nudo insigniter striata. Pedunculi semipollicares. — Lachlan River, N. S. Wales, *Cunningham.*

✓ 152. *A. venulosa* (sp. n.), subviscosa, ramulis angulatis molliter villosis, phyllodiis puberulis glabratisve falcato-oblongis utrinque angustatis mucronulatis coriaceis multinerviis crebre venulosis prope basin obscure glanduliferis, pedunculis brevibus pubescentibus solitariis v. brevissime racemulosis, capitulis dense multifloris glabriusculis.—Phyllodia circa 2 poll. longa, 5-6 lin. lata, rigida, venis crebris reticulato-subparallelis.—Liverpool plains, *Cunningham.*

β? lanata, ramulis minus angulatis, phyllodiis minoribus obtusis. An species propria ?—Hunter's River, *Cunningham.*

153. *A. cyclopis* (Cunn. in G. Don, Gard. Dict. ii. 404.), glabra, ramulis angulatis, phyllodiis anguste oblongis rectiusculis apice obtuso subincurvo basi angustatis coriaceis rigidis multinerviis obscure venulosis, pedunculis solitariis v. 2-3 racemosis, capitulis dense multifloris, legumine lato lineari plano arcuato glabro marginibus incrassatis valvulis coriaceis. Forte *A. melanoxyli* varietas, sed phyllodia breviora, rectiora, rigidiora et minus venulosa. Semina strophiola magna cincta.—K. George's Sound, *Cunningham, Fraser ;* Swan River, *Drummond, Toward.*

154. *A. melanoxylon* (Br. in Hort. Kew, ed. 3, v. 462.), glabra, ramulis angulatis, phyllodiis falcato-oblongis sublanceolatisve obtusis v. rarius acutis basi longe angustatis coriaceis rigidulis multinerviis crebre venulosis, racemis brevibus 1-4-cephalis, capitulis dense multifloris, legumine lato-lineari plano arcuato glabro marginibus incrassatis valvulis coriaceis. —Wendl. Diss. t. 6.—Bot. Mag. t. 1659.—Bot. Cab. t. 630. —*A. arcuata* Sieb. Pl. Nov. Holl. n. 459.—Phyllodia sæpius 3-4 poll. longa, ½-1 poll. lata. Pedunculi 3-4 lin. longi, raro solitarii. Flores in capitulo ultra 30. Calyces membranacei, subciliati, corolla paullo breviores. Legumen subglaucescens, 2-4 poll. longum, interdum fere in circulum curvatum. Semina suborbicularia, strophiola magna cincta.—Common in N. S. Wales, *Cunningham, Sieber n.* 459, *Hügel, Mitchell, &c.* ; V. Diemen's Land, *Gunn, n.* 201.

A species having apparently much affinity to this one was gathered by Cunningham at Cambridge Gulf on the N. Coast, but the specimens are too imperfect to describe.

155. *A. brevipes* (Cunn. in Bot. Mag. t. 3358.), glabra, ramulis subteretibus, phyllodiis elongato-falcatis mucronatis basi longe angustatis subcoriaceis tenuiter multinerviis venulis raro anastomosantibus, racemis brevibus 1-3-cephalis, calyce sinuato-dentato corollæ dimidium æquante.—Phyllodia 5-7

poll. longa, 4-5 lin. lata. Pedunculi 3-4 lin. longi. Capitula majora quam in *A. melanoxylo*.—This plant is only known to me from a single garden specimen. It appears different from *A. melanoxylon*, but cannot be determined with certainty till the fruit is known.

156. *A. implexa* (sp. n.), glabra, subglauca, ramulis subteretibus, phyllodiis elongato-falcatis obtusiusculis basi longe angustatis subcoriaceis tenuiter multinerviis et venulosis, racemis oligocephalis laxis subramosis, capitulis dense multifloris, calyce corolla subtriplo breviore, legumine longe et anguste lineari arcuato contorto marginato glauco-pruinoso.—Phyllodia semipedalia iis *A. heterophyllæ* potius quam *A. melanoxyi* similia. Capitula parva. Legumina semipede longiora, vix 2 lin. lata, post semina delapsa valde contorta et implexa.—Ravines of Shoal Haven River, E. Coast, *Cunningham.*

157. *A. Simsii* (Cunn. MSS.), glabra, ramulis vix angulatis, phyllodiis linearibus subfalcatis obtusis mucronatis basi longe angustatis tenuibus trinerviis venis reticulato-parallelis, pedunculis solitariis v. brevissime racemosis, capitulis multifloris glabris, calyce dentato v. breviter fisso, legumine anguste lineari plano glabro tenuiter marginato.—Species distinctissima, ramulis gracilibus. Phyllodia 2-3 poll. longa, 1½-2, rarius 3, lin. lata.—N. E. Coast, Cleveland's Bay, *Cunningham;* also in Bauer's collection, and cultivated in Trinidad and in the Mauritius' Botanic Gardens from Australian seed.

158. *A. heterophylla* (Willd. Spec. iv, 1054.), glabra. v. junior flavescenti-pubescens, ramulis vix angulatis, phyllodiis elongato-falcatis obtusis basi longe angustatis subcoriaceis multinerviis hinc inde folio bipinnato terminatis, pedunculis solitariis v. brevissime racemosis, capitulis dense multifloris pubescentibus, calyce dentato, legumine lato lineari subarcuato plano glabro marginato.—Phyllodia semipedalia 6-9 lin. lata. Capitula pauca. Ovarium glabrum v. villosum. Legumen 3-6 poll. longum, semipollicem latum. — Oahu, Sandwich Islands.

β? latifolia, phyllodiis falcato-oblongis obtusissimis coria- eis. An species propria?.—Owhyhee, on Mount Kaah, *lacrae.*

159. *A. laurifolia* (Willd. Spec. iv. 1053.), glabra, ramulis ibteretibus, phyllodiis ovatis v. oblongo-ovatis obtusiusculis embranaceo-coriaceis multinerviis, pedunculis solitariis v. evissime racemosis, capitulis parvis multifloris, sepalis stinctis, legumine lato-lineari plano glabro margine anguste eformi.—Phyllodia 2-3 poll. longa, 1½-2 poll. lata, basi andulifera. Capitula quam in præcedentibus multo minora. egumen magnitudine *A. heterophyllæ*, sed margo dilatatus c incrassatus.—New Caledonia, *Labillardière*, Friendly lands, *Mathews*, *Hinds*.

160. *A. complanata* (Cunn. MSS.), glabra, ramulis ancipitibus balatis, phyllodiis ab alis distinctis ovali-oblongis obtusis bcoriaceis multinerviis, pedunculis solitariis, capitulis dense ultifloris.—Phyllodia fere *A. laurifoliæ*, sed angustiora rigi- ora.—*A. anceps*, Hook, Ic. Pl. ii, 167, non DC.—*A. vis- oides* Colla ex Linnæa iv, Littbl. 56? cum syn. *A. com- essa* Barron Field.—Dumaresque River, *Cunningham*, risbane River, *Fraser*.—There is no such plant as *A. com- essa* mentioned in Field's N. S. Wales, and if it be unningham's *A. complanata* that was meant by Colla, there es not appear to have been any reason for changing his me.

10. *Juliferæ.* Caules non alati. Stipulæ obsoletæ. Phyllodia oblonga, lanceolata, linearia v. subulata, non pungentia, multinervia v. (in angustifoliis) subuninervia, venis parallelis rarius reticulatis. Inflorescentia spicata.

1. *Phyllodiis angustissimis, spicis densis amentiformibus.* llied to the *Calamiformes*).

161. *A. filifolia* (sp. n.), glabra, ramulis teretibus, phyllo- is longe filiformibus rigidis teretibus tenuissime striatis ice breviter et recte mucronatis, spicis ovoideis densis litariis sessilibus.—Phyllodia 4-6-pollicaria, quam in se- entibus multo tenuiora, nec apice uncinata. Spicæ inter- im fere globosæ.—Swan River, *Drummond*.

162. *A. ephedroides* (sp. n.), glabra, ramulis teretibus, phyllodiis elongato-subulatis subcompresso-teretibus apice uncinato-subulatis tenuissime striatis, spicis breviter cylindricis densis solitariis geminisve sessilibus.—Habitus et phyllodia *A. calamiformis*. Spicæ florigeræ subsemipollicares, ante anthesin abbreviatæ, floribus arcte imbricatis amentiformes.—Cape Porteray, *Fraser*, Swan River, *Preiss*.

163. *A. xylocarpa* (Cunn. MSS. non Willd.), glabra, subviscosa, ramulis teretibus, phyllodiis linearibus subulatisve teretibus v. subcompressis muticis obscure uninerviis rigidulis, spicis solitariis geminisve breviter pedunculatis densis, legumine lineari crasso compresso lignoso intus septato.—Phyllodia 2-4 poll. longa. Spicæ 4-6 lin. longæ, ante anthesin amentiformes. Flores 4-meri, rarius 5-meri. Legumen 2-pollicare, basi longe angustatum, valvulis fere ut in *Calliandra* elastice dehiscentibus, septis obliquis.—Dampier's Archipelago, N. W. Coast, *Cunningham*.

164. *A. arida* (sp. n.), glabra, pallida, subviscosa, ramulis teretibus, phyllodiis anguste linearibus obtusis basi angustatis planis crassis obscure subtrinerviis, spicis solitariis geminisve breviter pedunculatis densis, legumine lineari crasso-compresso basi longe angustato sublignoso intus septato.—Ab *A. xylocarpa* differt præcipue phyllodiis planis 1-2 lin. latis. Legumina majora videntur.—Parched desert shores of Cambridge Gulf, N. W. Coast, *Cunningham*.

165. *A. oncinophylla* (Lindl. in Bot. Reg. App. 15), glabra v. resinoso-puberula, ramulis angulatis, phyllodiis elongato-linearibus subulatis planis subrecurvo-mucronatis rigidis crassiusculis striato-trinerviis basi angustatis, glandula prope basin obscura, spicis subgeminis breviter pedunculatis cylindricis densis, sepalis liberis spathulatis.—Phyllodia fere *A. elongatæ*. Pedunculi pubescentes. Spicæ semipollicares, ante anthesin amentiformes, floribus densissime imbricatis 3-4-meris. Variat phyllodiorum acumine recto, uncinato, v. obsoleto.—Swan River, *Drummond*.

2. *Phyllodiis rectis, spicis laxis sæpissime dissitifloris.—Ovarium villosum.*

6. *A. linarioides* (sp. n.), glabra v.-viscidulo-puberula, lis teretibus dense foliosis, phyllodiis linearibus mucro- basi parum angustatis obscure uninerviis, spicis bus multifloris phyllodia excedentibus, sepalis anguste ulatis liberis, legumine anguste lineari glabro intus con- .—Phyllodia pollicaria, venulis obsoletis, sæpius obtusa mucrone innocuo. Spicæ sesquipollicares, rhachi cente. Flores parvi.—Australia, *Bauer*.

7. *A. linearis* (Sims Bot. Mag. t. 2156), glabra v. junior r puberula, ramulis angulatis, phyllodiis longe et anguste ibus muticis v. vix mucronatis 1-3-nerviis nervo me- prominente lateralibus obscuris basi longe angustatis dulosis, spicis gracilibus interruptis phyllodio multo bre- us glabris, calyce brevi 4-dentato, legumine anguste i intus continuo.—Bot. Cab. t. 595.—*A. longissima*, ll. Diss. t. 11.—Bot. Reg. t. 680.—Phyllodia sæpius oll. longa, vix linea latiora, interdum 9-10 poll-longa. ni 1-2-pollicares. Petala per anthesin sæpius libera.— Jackson, *Sieber*, *n.* 451, etc.

Tasmanica, phyllodiis rigidioribus, spicis abbreviatis. iemen's Land, *Gunn*, *n.* 677.

8. *A. floribunda* (Willd. Spec. iv, 1051), glabra, ramulis atis, phyllodiis longiusculis linearibus lanceolatisve que angustatis acutis tenuiter plurinerviis, racemis graci- interruptis phyllodio brevioribus, calyce brevi dentato. nt. Choix, t. 13.—*A. angustifolia*, Lod. Bot. Cab. 3, non Jacq.—*A. lineari* valde affinis, sed phyllodia a, breviora, acutiora, nervis lateralibus venisque paral- vix nervo mediano obscurioribus. Spicæ pleræque ipollicares. Flores *A. linearis*.—Port Jackson, *Sieber*, *n.* etc.

latifolia.—*A. intermedia*, Cunn. in Bot. Mag. t. 3203.

9. *A. dissitiflora* (sp. n.) glabra v. junior puberula, ramu- ngulatis, phyllodiis longiusculis lineari-lanceolatis sub- ulatisve obtusiusculis mucronatis basi angustatis sub- ceis basi 3-5-nerviis venis subparallelis v. vix reticulatis, nis gracilibus interruptis phyllodio brevioribus, calyce

brevi dentato, legumine anguste lineari subtereti.—Inter *A. floribunda* et *A. mucronata* media. Phyllodia quam in priore obtusiora, rigidiora, pleraque 3-4-pollicaria; latiora, longiora et tenuiora quam in *A. mucronata*. Spicæ et flores *A. floribundæ*. Legumina longa subtorulosa.—V. Diemen's Land, *Gunn, n.* 802. This and the four following species, however different in their extreme forms, run much into one another, and are difficult to define with precision.

170. *A. mucronata* (Willd. Enum. Suppl. 68), glabra v. junior puberula, ramulis vix angulatis, phyllodiis anguste lineari-spathulatis obtusis basi angustatis coriaceis striato-trinerviis vix venosis, spicis interruptis phyllodio brevioribus, calyce brevi dentato, legumine anguste lineari subtereti. —Wendl. Diss. t. 12.—Bot. Mag. t. 2747.—Phyllodia pleraque 1½-2½ poll. longa, 1-2 lin. lata. Spicæ pollicares. Legumen 3-5-pollicare, utrinque acutum, marginatum, subtorulosum.—V. Diemen's Land, *Gunn, n.* 130.

171. *A. dependens* (Cunn. MSS.), glabra v. junior pubescens, ramulis vix angulatis, phyllodiis anguste oblongis v. late lineari-spathulatis obtusis submucronatis basi angustatis coriaceis multinerviis vix reticulatis, spicis interruptis phyllodio brevioribus, calyce brevi dentato, legumine anguste lineari subtereti.—Ab *A. mucronata*, cujus forte mera varietas, differt præcipue phyllodiis latioribus, ab *A. Sophoræ* phyllodiis angustioribus raro anastomosantibus.—V. Diemen's Land, *Cunningham, Gunn, n.* 202, 480, 678.

172. *A. Sophoræ* (Br. in Hort. Kew, ed. 3, v. 462), glabra v. junior puberula, ramulis angulatis, phyllodiis obovato-oblongis obtusis calloso-mucronatis basi cuneatis coriaceis 3-5-nerviis reticulato-venosis, spicis interruptis phyllodio brevioribus, calyce brevi dentato, legumine anguste lineari subtereti arcuato.—Labill. Nov. Holl. t. 237.—Bot. Cab. t. 1351.—Ramuli crassiores quam in præcedentibus. Phyllodia pleraque bipollicaria, 8-12 lin. lata, interdum vero occurrunt formæ phyllodiis longioribus fere *A. longifoliæ*. Calyx paullo major quam in affinibus. Legumen valde arcuatum nec ut in affinibus rectum.—V. Diemen's Land, *Labillardière*,

Cunn, *n.* 675, and apparently the same species in fruit from Moreton Bay, *Cunningham*.

173. *A. longifolia* (Willd. Spec. iv, 1052), glabra v. junior puberula, ramulis angulatis, phyllodiis sublanceolatis v. elongato-oblongis obtusis v. rarius acutiusculis mucronulatis basi longe angustatis coriaceis 2-3-nerviis reticulato et subparallele venosis, spicis interruptis phyllodio multo brevioribus, calyce brevissimo dentato, legumine longe lineari rectiusculo compresso glabro.—Vent. Malm. t. 62.—Bot. Rep. t. 107.—Bot. Reg. t. 362.—Bot. Cab. t. 678.—Bot. Mag. t. 1827 et 2166.—*A. intertexta* Sieb. in DC. Prod. ii, 454, (forma latifolia).—*A obtusifolia* Cunn! in Field, N. S. Wales, 345 (forma elongata).—Phyllodia pleraque 4-5-pollicaria, interdum semipedalia v. etiam longiora, basi in petiolum brevem apice glanduliferum angustata. Spicæ sæpius geminæ, pollice parum longiores. Petala ut in omnibus affinibus apice revoluta. Legumen pluripollicare, 2½-3 lin. latum, utrinque acutum, subtorulosum, seminibus remotis.—Common in the Blue Mountains, *Sieber*, *n.* 438, 439 *and* 453, *and many other collections.*

3. *Phyllodiis plus minusve falcatis venis crebris parallelis raro anastomosantibus.* Legumen (ubi notum) coriaceum intus continuum.

174. *A. doratoxylon* (Cunn. in Field, N. S. Wales, 345), glabra, subcinerascens, ramulis teretibus, phyllodiis longe linearibus subfalcatis apice recurvis breviter acuminatis tenuiter striato-multinerviis basi longe angustatis, spicis cylindricis solitariis subracemosisve, calyce pubescente subdentato corolla glabra dimidio breviore.—Phyllodia 4-6 poll. longa, 2-3 lin. lata, nervo mediano cæteris validiore. Spicæ vix unquam pollicares. Flores 3-4-meri.—N. S. Wales, *Cunningham*, *Hügel*, *Fraser*.

175. *A. acuminata* (sp. n.), ramulis subteretibus phyllodiisque junioribus flavescenti-pubescentibus demum glabratis, phyllodiis longe linearibus subfalcatis apice subulato-acuminatis recurvis tenuiter striato-multinerviis basi longe angus-

tatis, spicis subsessilibus cylindricis densis, sepalis anguste spathulatis profunde liberis pubescentibus, legumine anguste lineari compresso glabro rigide coriaceo.—Phyllodia fere *A. doratoxyli*, nervo mediano cæteris validiore. Calyx diversissimus. Legumen subtripollicare, vix 2 lin. latum, inter semina constrictum.—Swan River, *Drummond*, King George's Sound, *Bagster*.

176. *A. julifera* (sp. n.), glabra, ramulis subteretibus, phyllodiis anguste falcato-lanceolatis utrinque longe angustatis marginatis tenuiter striato-multinerviis, spicis breviter pedunculatis cylindricis densis, sepalis fere a basi liberis anguste spathulatis lanatis.—Affinis *A. acuminatæ* at glabrior, phyllodia 3-4-pollicaria, arcuata, sæpe glandula terminata, nervis 1-3 cæteris validioribus. Spica subpollicaris, pedunculo 1-2 lin. longo. Sepala vix basi coalita.—Rodd's Bay, N.E. Coast, *Cunningham*.

177. *A. delibrata* (Cunn. MSS.), glabra, viscidula, ramulis angulatis demum teretibus, phyllodiis anguste falcato-lanceolatis linearibusve utrinque angustatis apice obtusiusculis oblique mucronatis immarginatis tenuiter striato-multinerviis, spicis breviter pedunculatis, legumine lineari plano coriaceo glabro intus continuo.—Phyllodia 4-5-pollicaria, fere *A. juliferæ* sed minus acuminata. Flores non vidi. Legumen 4-5 poll. longum, fere 4 lin. latum, margine incrassatum, inter semina leviter contractum.—York Sound and Port Warrender, N.W. Coast, *Cunningham*. The bark of the older branches appears to peel off in small shreds, whence probably Cunningham's name.

178. *A. leucadendron* (Cunn. MSS.), tota pube brevi subsericea incana, junior flavescens, phyllodiis falcato-lanceolatis utrinque angustatis crassiusculis coriaceis tenuiter striato-multinerviis, spicis breviter pedunculatis cylindraceis dense imbricatis, calyce tenuissime membranaceo sinuato-dentato corollæ dimidium subæquante.—Affinis habitu *A. glaucescenti*, phyllodia minora, crassiora, magis incana. Spicæ etiam floridæ densissimæ, vix semipollice longiores. Legu-

junius tomentosum et crassiusculum est ; annon matu-
lignosum septatum ?—Hunter's River, *Cunningham* ;
ane River, *Fraser*.

9.—*A. glaucescens* (Willd. Spec. iv, 1052), tota pube
adpressa cinerascens, junior flavescens, demum gla-
ens, ramulis angulatô-triquetris, phyllodiis falcato-ob-
s lanceolatisve utrinque angustatis coriaceis tenuiter
o-multinerviis, spicis pedunculatis elongato-cylindricis
sculis, calyce lanato dentato corolla 3-4-plo breviore.—
inerascens, Sieb. in DC. Prod. ii, 454.—Bot. Mag.
14.—Phyllodia pleraque 4-pollicaria, 8-9 lin lata, variant
n tam longitudine quam latitudine. Spicæ floridæ sub-
ipollicares, flavo-cinerascentes, floribus subdistinctis 4-5-
.—N. S. Wales, *Sieber, n.* 448, *Cunningham*, etc.

0.—*A. Cunninghamii* (Hook. Ic. Pl. ii, t. 165, non Don),
a v. vix junior minute puberula, ramulis angulato-
etris, phyllodiis amplis falcato-oblongis lanceolatisve
que angustatis subcoriaceis tenuiter striato-multinerviis,
elongato-cylindricis laxis v. demum interruptis, calyce
to-dentato corolla 2-3-plo breviore, legumine anguste
re subtereti coriaceo intus continuo.—Phyllodia sæpius
ra quam in *A. glaucescente*, usque ad 6 poll. long, 1½ poll.
rarius 4-pollicaria. Spicæ 1½-3-pollicares, fere glabræ.
men flexuosum, glabrum, marginatum.—Moreton Bay,
ter's, Hastings and Brisbane Rivers, *Cunningham*,
r.

1. *A. homomalla* (Wendl. Diss. 49, t. 13), which I have
een, appears from Wendland's figure and description to
ry near *A. Cunninghamii*, but with much narrower phyl-
than I have seen in that species.

2.—*A. plectocarpa* (Cunn. MSS.), glabra, subglaucescens,
lis angulatis subtriquetris, phyllodiis falcato-lanceolatis
que longe angustatis tenuiter striato-multinerviis, spicis
ato-cylindricis interruptis, calyce sinuato-dentato corolla
lo breviore, legumine recto lineari plano marginato
ceo glabro, valvulis sæpius bullato-flexuosis.—Phyllodia
res *A. leptocarpæ*. Spicæ longiores, magis interruptæ.

Legumen 3-4 lin. latum.—Cambridge Gulf and Sims's Island, N.E. Coast, *Cunningham*.—This and some of the following species are very difficult to distinguish in flower, and I am not sure of having, in all cases, correctly matched the flowering and the fruit specimens.

183.—*A. leptocarpa* (Cunn. MSS.), glabra, ramulis subteretibus, phyllodiis falcato-lanceolatis utrinque longe angustatis tenuiter striato-multinerviis, spicis elongato-cylindricis subinterruptis glabris, calyce sinuato-dentato corolla pluries breviore, legumine anguste lineari subtereti marginato subtoruloso intus continuo.—Phyllodia 4-6 poll. longa, 4-5 lin. lata, valde arcuata, in petiolum longiusculum attenuata. Spicæ 1-1½-pollicares, floribus distinctis. Legumen 3 poll. longum, vix linea latius, valvulis coriaceis. Semina longitudinalia, strophiola magna plicata.—Endeavour River and Cape Flinders, North Coast, *Cunningham*.

184. *A. polystachya* (Cunn. MSS.), glabra, ramulis subteretibus v. junioribus angulatis, phyllodiis longe falcato-oblongis lanceolatisve apice breviter et obtuse acuminatis basi longe angulatis multinerviis, spicis elongato-cylindraceis interruptis glabris, calyce sinuato-dentato corolla 3-4-plo breviore.—Specimina (omnia florida) ab *A. leptocarpa* differunt phyllodiis amplis plerisque semipede longioribus 10-15 lin. latis spicisque longioribus. In specimine fructifero (an ejusdem speciei ?) unico, legumen latiuscule lineare, arcuatum, planum, coriaceum, 3-4 lin. latum.—Port Bowen, *Cunningham*, Port Essington, *Armstrong*; Haggerstone's Island, E. Coast (in fruit), *Cunningham*.

4. *Phyllodia præcedentium. Legumen latum, subspiraliter contorto-flexuosum.*

185. *A. spirorbis* (Labill. Sert. Austr. Caled. t. 69), glabra, subglaucescens, ramulis vix angulatis, phyllodiis anguste falcato-oblongis lanceolatisve apice obtusis utrinque longe angustatis coriaceis tenuissime multinerviis, spicis elongato-cylindricis subinterruptis glabris, calyce corolla dimidio breviore sinuato-dentato, legumine lato compresso coriaceo glaucescente subspiraliter contorto-flexuoso.—Phyllodia con-

ta, 3-4 poll. longa, 3-6 lin. lata. Spicæ 1½ pollicares. gumen 4-5 lin. latum, valvulis crassiusculis.—New Calenia, *Labillardière*.

186. *A. auriculæformis* (Cunn. MSS), glabra v. pube uissima cinerascens, ramulis vix angulatis, phyllodiis late ato-oblongis utrinque acutis sublunatis coriaceis tenuiter ltinerviis, spicis breviter pedunculatis cylindricis gracilibus, yce 4-5-dentato corolla dimidio breviore, legumine lato no arcuato-contorto sinuato undulato glabro coriaceo.—yllodia fere *A. crassicarpæ*, 3-4 poll. longa, 1-1½ poll. lata, e semilunata, venis raro anastomosantibus. Legumen e *A. spirorbis*, sed magis compressum et valde flexuosum. Goulburn and Sims's Islands, N. Coast, *Cunningham*.

5. *Phyllodiis præcedentium, nunc abbreviatis, legumine crassoiaceo compresso sublignoso intus transversim v. oblique tato. Spicæ sæpius dense imbricatæ.*

187. *A. Wickhami* (sp. n.), glabra, glauco-cœsia, ramulis gulatis, phyllodiis breviter ovali-oblongis subfalcatis unduis apice obliquo sæpe glanduliferis coriaceis tenuiter mulerviis, spicis parvis cylindricis ante anthesin densisne imbricatis, calyce dentato corollæ dimidium æquante.—yllodia semipollicaria iis *A. translucentis* simillima. Spicæ merosæ et flores *A. stigmatophyllæ*.—Swan Bay, N. W. ast, *Wickham*.

188. *A. stigmatophylla* (Cunn. MSS.), glabra, v. vix junior escenti-puberula, ramulis angulatis subcompressis, phyliis oblique et anguste oblongis subfalcatis utrinque angusis apice sæpius glanduliferis coriaceis tenuiter multinerviis, cis parvis cylindricis, floribus minimis ante anthesin bricatis demum distinctis, calyce dentato corollæ dimidium æquante.—Phyllodia fere 2 poll. longa, 3-4 lin. lata, ssiuscula, marginata, subundulata. Spicæ 6-9 lin. longæ demum pollicares. Petalorum nervi valde prominentes.—unswick Bay, N. Coast, *Cunningham*.

189. *A. loxocarpa* (sp. n.), glabra, glaucescens, ramulis angulatis, phyllodiis falcato-lanceolatis v. lineari-spathus obtusis basi longe angustatis striato-multinerviis, spicis

subsessilibus gracilibus cylindraceis, floribus minimis ante anthesin imbricatis, calyce laxo membranaceo corollæ dimidium æquante, legumine lineari-cuneato basi angustato crasso compresso sublignoso, intus oblique septato.—Phyllodia quam in præcedente longiora, angustiora, sæpe 4-pollicaria, vix petiolata. Spicæ tenuiores. Legumen 2-3 pollicare, superne $2\frac{1}{2}$ lin. latum, apice rectum, valvulis coriaceo-lignosis oblique venosis, uti in *Calliandris* elastice dehiscentibus. Semina obliqua, ovoidea, strophiola parva.—South Goulburn Island, N. Coast, *Cunningham*.

190. *A. oncinocarpa* (sp. n.), glabra, ramulis teretibus, phyllodiis falcato-oblongis lanceolatisve obtusiusculis basi angustatis striato-multinerviis, spicis elongatis demum interruptis, calyce laxo membranaceo corollæ dimidium superante, legumine lato-lineari subrecto apice uncinato basi angustato crasso plano glabro sublignoso intus oblique septato.—Phyllodia *A. loxocarpæ*, v. paullo longiora. Rhachis spicæ fructiferæ subtripollicaris, floriferæ $1\frac{1}{2}$-2-pollicaris. Flores parvi, 4-5-meri, demum distincti. Legumen 4 lin. latum.—N. Coast, Melville Island, *Fraser*, Sims's Island, *Cunningham*.

191. *A. umbellata* (Cunn. MSS), pube tenui canescens v. demum glabrata, ramulis subangulatis, phyllodiis late oblongis subfalcatis obtusis undulatis basi angustatis coriaceis striato-multinerviis, spicis sessilibus cylindricis densis, calyce hispido 4-5-fido, legumine anguste lineari crasso-coriaceo intus oblique septato.—Phyllodia $2\frac{1}{2}$-3 poll. longa, 6-12 lin. lata, vix petiolata. Spicæ vix pollicares. Flores parvi. Legumen subbipollicare, vix linea latius, longitudinaliter venosum. Semina obliqua, ovoidea, strophiola majuscula plicata.—N. Coast, *Bauer*, Cleveland Bay and Cape Flinders, *Cunningham*.

192. *A. aulacocarpa* (Cunn. MSS), pube tenui cinerascens v. demum glabrata, ramulis angulato-subtriquetris, phyllodiis falcato-oblongis lanceolatisve utrinque angustatis petiolatis tenuiter multinerviis, spicis breviter pedunculatis cylindricis densis, calyce sinuato-dentato corolla pluries breviore, legumine falcato-oblongo apice uncinato basi angustato crasso

resso sublignoso intus oblique septato. — Phyllodia
ollicaria, semipollicem lata. Spicæ subpollicares.
s parvi. Legumen fere *A. oncinocarpæ* sed brevius,
falcatum, apice angustatum; valvulæ oblique venosæ.
rt Bowen, N. Coast, *Cunningham.*

. *A. calyculata* (Cunn. MSS.), glabra v. subcineras-
ramulis compressis, phyllodiis falcato-oblongis obtusius-
basi angustatis petiolatis tenuiter multinerviis, spicis
er pedunculatis cylindricis laxiusculis, calyce dentato
corolla triplo breviore.—*A. aulacocarpæ* affinis, sed
i fere ancipites, phyllodia minora (pleraque bipollicaria)
iora, et spicæ minores. Legumen non vidi.—Fitzroy
l, N. E. Coast, *Cunningham.*

. *A. crassicarpa* (Cunn. MSS.), glabra v. pube tenuis-
cinerascens, ramulis vix angulatis, phyllodiis late falcato-
gis utrinque angustatis coriaceis tenuiter multinerviis,
breviter pedunculatis cylindricis densis, calyce corolla
lo breviore hispido 4-5-fido, legumine oblongo subsinu-
basi angustato crasso coriaceo lignoso plano intus
ie septato.—Spicæ et flores fere *A. aulacocarpæ*. Phyl-
multo latiora, 4-5 poll. longa, 1-1½ poll. lata. Legu-
subbipollicare, 7-8 lin. latum, valvulis transversim
is.—N. Coast, *Bauer*, Lizard Island, *Cunningham.*

. *A. retinervis* (sp. n.), glabra v. subcanescens, ramulis
retibus, phyllodiis longe falcato-oblongis sublanceola-
utrinque longe angustatis petiolatis 3-7-nerviis venis
s tenuibus parallelis anastomosantibus, spicis gracilibus
lricis densis, calyce hispido 4-5-fido corolla dimidio
re, legumine lineari-falcato latiusculo compresso cori-
intus oblique septato.—Phyllodia 3-5-pollicaria, circa
lata, ab iis affiniorum facile distincta venatione parallelo
m sed (oculo præsertim armato), plus minusve retiformi.
parvi. Legumen 3 poll. longum, 3-4 lin. latum. val-
valde convexis nec ut in præcedentibus planis. Seminum
iola parva.—Cape Pond and Isle Lacrosse N. Coast,
ngham.

Dimidiatæ. Caules non alati. Stipulæ obsoletæ.

Phyllodia oblique rhombea, oblonga, v. falcato-lanceolata, nervis 2-5 basi cum margine inferiore confluentibus sursum curvatis, infimo v. rarius 2 ad apicem attingentibus, venis transversis reticulatis. Inflorescentia capitata v. spicata.

* *Inflorescentia capitata.*

196. *A. latescens* (sp. n.), glabra, ramulis angulatis, phyllodiis elongato-falcatis obtusis basi longe angustatis marginulatis minute 1-2-glanduliferis, nervis 2 ad apicem attingentibus tertio obscuro v. nullo, racemis abbreviatis, capitulis multifloris longe pedunculatis.—Species hinc *A. falcatæ*, hinc *A. binervatæ* affinis. Phyllodia semipedalia. Venæ interdum nonnullæ nervis subparallelæ, cæteræ reticulatæ. Racemi rhachis vix semipollicaris, pedunculis 8-10 lin. longis, ex axilla bracteæ squamiformis ortis. Capitula parva, ultra 30-flora.—May-Day Island, V. Diemen's Gulf, N. Coast, *Cunningham*.

197. *A. binervata* (DC. Prod. ii. 452.) glabra, ramulis angulatis mox teretibus, phyllodiis falcato-oblongis lanceolatisve utrinque longe angustatis marginulatis 2-3-nerviis, nervo infimo ad apicem attingente, glandula majuscula a basi distante, racemis laxis phyllodio brevioribus, capitulis sub-20-floris.—*A. umbrosa*, Cunn. in G. Don, Gard. Dict. ii. 405.—Bot. Mag. t. 3338.—Phyllodia 3-4 poll. longa, acuminata v. obtusa; nervus secundus paullo infra apicem evanescit, tertius dum adest vix ad medium attingit. Racemi graciles, 3-8-cephali. Legumen lineare, rectum, 4-6 poll. longum, fere 6 lin. latum, planum, tenuiter marginatum, glabrum, intus continuum? valvulis membranaceo-coriaceis.—N. S. Wales, *Sieber*, *n.* 504; Illawara River, *Hügel*, *Cunningham*; Nepean and Hastings Rivers, *Fraser*.

198. *A. sericata* (Cunn. MSS.), pube subvelutina tenuissima pallens, ramulis teretibus, phyllodiis falcato-lanceolatis oblongisve acuminatis obtusis basi dimidiato-cuneatis 2-4-nerviis, pedunculis solitariis?, legumine oblongo-lineari sublignoso intus septato.—Specimina deflorata cum legumine unico. Phyllodia 4-6-pollicaria prope basin 6-12 lin. lata, imâ basi in petiolum brevissimum angustata. Nervi basi

confluentes. Legumen 4 poll. longum, 1 poll. latum, obtusum, basi acutum, glabrum, nitidum.—Montague and York Sounds, N. Coast, *Cunningham*.

199. *A. flavescens* (Cunn. MSS.), ramulis angulatis phylodiisque junioribus lana floccosa mox decidua flavicantibus, hyllodiis petiolatis late falcatis longe acuminatis basi cunetis marginatis 3-nerviis reticulato-venosis, glandula petiolari ajuscula, marginalibus 2-3 parvis, inflorescentia racemoso-aniculata, flavo-tomentosa, capitulis parvis multifloris.—hyllodia semipedalia, 1-1¼ poll. lata. Nervi ad glandulas arginales diriguntur.—N. E. Coast, *Cunningham*.

200. *A. Mangium* (Willd. Spec. iv. 1053.), ramulis triqueris, phyllodiis ovatis acutis 3-4 nerviis venosis, legumine lcato.—Mountains of Amboyna. This species is only nown from Rumphius's figure and description, it must have ery nearly the foliage and branches of *A. holoserica*, but it usually placed amongst those with a capitate inflorescence. his character is however by no means evident from Rumhius's figure.

** *Inflorescentia spicata.*

201. *A. holoserica* (Cunn. in G. Don, Gard. Dict. iv. 407.) ta pube sericea canescens, ramulis angulato-triquetris, hyllodiis amplis oblique ovato-oblongis basi dimidiato-neatis nervis 3-4 basi cum margine inferiore confluentibus ticulato-venosis, spicis solitariis sessilibus cylindricis, flobus villosis, legumine anguste lineari flexuoso contorto mpresso.—*A. neurocarpa*, Cunn. in Hook. Ic. Pl. ii. t. 168. Phyllodia 4-6 poll. longa, 1-3 poll. lata, v. inferiora 8-9 ll. longa, 4-5 poll. lata. Spicæ pollicares. Legumen rvum, glabratum, inter semina contractum, valvulis convexis riaceis fuscis venoso-rugosis v. lævibus.—N. Coast, *Bauer*; rt Keatts, Cambridge Gulf, *Cunningham*.

202. *A. dimidiata*, canescens v. glabriuscula, ramulis vix gulatis phyllodiis late et oblique ovato-rhombeis basi nidiato-truncatis nervis 4-5 basi cum margine inferiore nfluentibus, venis tenuissime reticulatis, spicis sessilibus

subgeminis cylindricis ultimis paniculatis, floribus glabriusculis, legumine lineari rectiusculo subtereti glabro coriaceo lignoso intus continuo.—*A. dolabriformis*, Cunn. in Hook. Ic. Pl. ii. t. 169. non Wendl.—Phyllodia ramulorum floriferorum 3-4 poll. longa, 2-3 poll. lata, nonnulla teste Cunninghamio triplo saltem majora. Spicæ sesquipollicares, ante anthesin imbricatæ, demum laxæ. Calyx breviter 4-5-fidus, subciliatus. Legumen subbipollicare.—N. Coast in various places, *Cunningham.*

203. *A. humifusa* (Cunn. MSS.), molliter pubescens, ramulis subteretibus, phyllodiis late et oblique ovato-rhombeis mucronulatis basi dimidiato-truncatis coriaceis, nervis 4-5 basi cum margine inferiore confluentibus, venis crebre reticulatis validis, spicis sessilibus subsolitariis breviter cylindricis, floribus villosis, legumine anguste lineari crasso compresso pubescente.—Phyllodia minora et crassiora quam in *A. dimidiata.* Spicæ vix semipollicares. Flores *A. holosericeæ.*—N. Coast, *Bauer;* Cleveland Bay, *Cunningham.*

204. *A. latifolia* (sp. n.), glaberrima, glauca, ramulis angulato-triquetris, phyllodiis oblique ovato-rhombeis subfalcatisve superioribus breviter decurrentibus basi dimidiato-cuneatis, nervis 3-5 basi versus marginem inferiorem confluentibus, venis reticulatis tenuibus, spicis laxe cylindricis interruptisque glabris, calyce minimo.—Phyllodia 3-4-pollicaria, 1½-2 poll. lata. Spicæ bipollicares. Margo inferior phyllodiorum infra nervos dilatatur et sæpe in caulem breviter decurrit.—N. Coast?, *Bauer.*

Besides the above, I have seen in various collections, eight or ten species of phyllodineous Acacias, evidently new, but in specimens too imperfect to describe.

SERIES II. BOTRYCEPHALÆ. *Inermes. Folia bipinnata. Inflorescentia capitata, capitulis in racemos dispositis.*—Frutices v. arbores Australasici sæpe glaucescentes. Stipulæ parvæ v. obsoletæ. Petiolus glandulifer. Capitula globosa, pedunculis secus rhachim racemi alternis v. sparsis nec fasciculatis, racemis axillaribus v. paniculatim terminalibus. Legumen (ubi notum) lato-lineare, planum, intus continuum, epulposum.

205. *A. elata* (Cunn. MSS. non Grah.), petiolis panicu- isque junioribus aureo-pubescentibus, foliis amplis, pinnis istantibus 2-4-jugis, glandula petiolari verrucæformi juga- bus subnullis, foliolis 8-12-jugis lanceolatis acute acuminatis rinque tenuiter sericeis, capitulis breviter pedunculatis, cemis in paniculam amplam subaphyllam dispositis, floribus ıreo-pubescentibus, calyce corolla dimidio breviore.—Folia re sesquipedalia, foliolis sesquipollicaribus.—Shaded ra- nes, interior of N. S. Wales, *Cunningham.*

206. *A. schinoides* (sp. n.), glabra, glauca, caule tereti, nnis distantibus 4-5-jugis, glandulis verrucæformibus, galibus pluribus, foliolis 15-20-jugis elongato-linearibus bfalcatis obtusis 2-3-nerviis, capitulorum racemis panicu- tis, floribus glabris, calyce corolla dimidio breviore.—Foliola mipollicaria, lineam lata. Petala 5, fere ad basin fissa. varium glabrum.—Near Sydney, *Cunningham.*

207. *A. pruinosa* (Cunn. MSS.), glabra, glauca, ramulis retibus, pinnis distantibus 2-3-jugis, glandulis verrucæ- rmibus ad omnia paria pinnorum, foliolis 12-28-jugis blongis subfalcatis 1-3-nerviis, racemis polycephalis laxis niculatis, floribus glabris.—Foliola 4-5-lin. longa, 2 lin. ta, crassiuscula, confertiora quam in *A. schinoide*, multo merosiora quam in *A. spectabili.*—North of Liverpool lains, N. S. Wales, *Cunningham.*

208. *A. spectabilis* (Cunn. MSS.), glaucescens, glabra v. mulis petiolisque hirtellis, pinnis 2-5-jugis, glandula petio- i depressa obscura, jugalibus nullis, foliolis 4-8-jugis ovato-oblongis obtusissimis crassiusculis obscure 2-3- rviis, capitulorum racemis folio longioribus supremis pani- latis, floribus subglabris, calyce corolla dimidio breviore.— liola approximata 4-6 lin. longa, 2 lin. lata. Corolla 5-mera, iniis acuminatis. Legumen 3-4 poll. longum, 5 lin. latum, tum, planum, glaberrimum, glaucum, valvulis membrana- o-coriaceis. Semina 6-10, in medio legumine longitudinalia.

—N. S. Wales, Wellington Valley, Lachlan, Macquarrie and Gwydir Rivers, *Cunningham*; Brisbane River, *Fraser*.

209. *A. polybotrya* (sp. n.) ramulis subteretibus foliisque pubescenti-hirtis, pinnis 2-3-jugis, glandula petiolari nulla, jugalibus raris minutis, foliolis 6-10-jugis anguste oblongis obtusis crassiusculis 1-2-nerviis subglaucis hirtellis, racemis polycephalis folio multo longioribus supremis subpaniculatis, floribus glabriusculis.—Folia minora quam in *A. spectabili*; foliola angustiora, confertiora, 3-4-lin. longa, vix 1 lin. lata. Petioli mucrone recurvo deciduo terminati.—Gwydir River, *Fraser*.

210. *A. discolor* (Willd. Spec. iv. 1068.) ramulis teretibus subtetragonisve petiolisque pubescentibus, pinnis 3-6-jugis, glandula petiolari scutellæformi, jugalibus paucis parvis, foliolis 10-15-jugis oblongis obtusis mucronatisque obscure uninerviis glabris subtus pallidis, capitulorum racemis paniculatis v. infimis axillaribus, rhachi pedunculisque pubescentibus, floribus glabriusculis, calyce corolla striata subtriplo breviore, legumine lato-lineari recto plano glabro.—Bot. Rep. t. 235.—Bot. Mag. t. 1750.—Vent. Hort. Cels. t. 1.—Bot. Cab. t. 601.—Foliola 3-4 lin. longa. Legumen 2-3 poll. longum, 6 lin. latum.—N. S. Wales, Port Jackson, *Sieber*, *n.* 454,

jugis, glandulis verrucæformibus ad omnia paria pinnarum, foliolis 30-40-jugis anguste linearibus subulatisve rigidulis subglaucis, capitulis parvis, racemis axillaribus paniculatisque, floribus glabris, calyce corolla lævi dimidio breviore.—Vent. Hort. Malm. t. 61.—Foliola 3-5 lin. longa.—Port Jackson, *Sieber, n.* 436, *and others.*

β. *angulata*, ramulis minus angulatis, foliolis brevioribus confertioribus.—*A. angulata*, Desv. Journ. Bot. 1814. ii. 68. —With the preceding, *Sieber, n.* 460, and others.

213. *A. mollissima* (Willd. Enum. 1053.), ramulis angulatis petiolisque velutino-pubescentibus, pinnis 8-18-jugis, glandulis verrucæformibus ad omnia paria pinnarum, foliolis 30-40-jugis confertis linearibus obtusis pubescentibus, capitulorum racemis paniculatis, floribus glabriusculis, calyce corolla lævi dimidio breviore, legumine lato-lineari recto plano glabro.—Sw. Fl. Austral. t. 12.—*A. decurrens var. mollissima*, Lindl. Bot. Reg. t. 371.—V. Diemen's Land, *Gunn, n.* 477.

214. *A. dealbata* (Link. Enum. Hort. Berol. 455), ramis obscure angulatis petiolisque pube minuta incanis glaucisve, pinnis 10-20-jugis, glandulis verrucæformibus ad omnia v. pleraque paria pinnarum, foliolis 30-40-jugis confertis parvis linearibus obtusis minute cano-puberulis glaucisve, capitulorum racemis paniculatis, floribus glabris, calyce corolla lævi dimidio breviore.—Bot. Cab. t. 1928.—Silver Wattle.—Common in the Blue Mountains, N. S. Wales, *Sieber, n.* 446 and others; V. Diemen's Land, *Gunn, n.* 476.

215. *A. cardiophylla* (Cunn. MSS.), pubescens, ramulis teretibus v. obscure angulatis, pinnis 12-15-jugis brevibus, glandulis minutis raris, foliolis 6-10-jugis minimis ovatis subcordatis hispidulis, capitulorum racemis axillaribus folia subæquantibus, floribus puberulis.—Folia bipollicaria, pinnis 3-4 lin. longis, foliolis semilinearibus. Capitula parva.—Interior of N. S. Wales, N. of Macquarrie River, *Cunningham.*

216. *A. leptoclada* (Cunn. MSS.), ramis pedunculis foliisque glaberrimis subglaucis, pinnis 3-5-jugis brevibus confertis,

glandulis scutelliformibus plurimis, foliolis 6-10-jugis p
oblongis, racemis axillaribus oligocephalis folio longio
capitulis parvis setoso-hispidis.—Pinnæ 3-4 lin. longæ, f
semilinearia. Flores in specimine nondum aperti.—Liv
Plains, N. S. Wales, *Cunningham*.

217. *A. pubescens*, (Br. in Hort. Kew ed. 3. v.
ramulis teretibus petiolisque hirsutis, pinnis 3-10-jugis,
dulis minimis raris v. sæpius obsoletis, foliolis 6-18
confertis linearibus obtusis glabris, racemis polycephali
cilibus folio longioribus supremis paniculatis, capitulis
glabris, calyce corolla lævi triplo breviore. — Vent.
Malm. t. 21.—Bot. Mag. t. 1263.—N. S. Wales, *Sieb*
466, *and in almost every collection*.

SERIES III. PULCHELLÆ. *Inermes v. spinis axill*
armatæ. Folia bipinnata. Inflorescentia capitata v. s
simplex. Capitula v. spicæ axillaria, singula e gemma
bracteata orta.—Frutices Australasici, sæpius ramosi
Stipulæ subulatæ, molles, nunc obsoletæ. Petiolus s
sime glandulifer. Pedunculi e quaque gemma solitar
axilla sæpe gemini v. plurimi, rarius brevissime race
nonnulli abortientes spinas formant axillares. Leg
(ubi notum) planum, lineare, marginibus sæpius incra
intus continuum, epulposum.

218. *A. pentadenia* (Lindl. Bot. Reg. xviii. t. 1
inermis, glabra, ramulis angulatis, pinnis 3-5-jugis distan
glandulis scutelliformibus infra omnia paria pinnarum, f
20-30-jugis oblique ovatis oblongisve obtusis, pedu
pluribus brevissime subracemosis, capitulis globosis,
ciliato.—Foliorum rhachis 1-1½-pollicaris, pinnæ lon
foliola demum 2 lin. longa. Pedunculi pollicares, grac
Cultivated from seeds imported from the S. Coast of
tralia.

219. *A. nigricans* (Br. in Hort. Kew ed. 3. v.
inermis, glabra, ramulis subangulatis, pinnis 1-2-jugis, p
subdilatato glandulifero foliolis 5-7-jugis in pinna sup
1-3-jugis in inferiore, obovato-v. lineari-oblongis, pedu

solitariis v. fasciculatis foliis parvis intermixtis, capitulis globosis, calyce ciliato, legumine lato-lineare plano recto marginato.—Labill. Nov. Holl. t. 238.—Bot. Mag. t. 2188.—Bot. Cab. t. 313.—*A. rutæfolia*, Link. Enum. ii. 444.—K. George's Sound, *Bagster*.

220. *A. obscura* (Alph. DC. Not. 6. Pl. Rar. Gen. 10. t. 6.), inermis, tenuiter pubescens v. hispida, ramulis subangulatis, pinnis 1-2-jugis, petiolo subdilatato glandulifero, foliolis 5-10-jugis in pinna superiore, 1-3-jugis in inferiore ovali-oblongis, pedunculis solitariis v. fasciculatis, capitulis globosis paucifloris, calyce puberulo, legumine oblongo-lineare plano marginato glabro v. hispidulo.—Vix non varietas hispida *A. nigricantis*.—K. George's Sound, *Bagster*.

221. *A. Mitchelli* (sp. n.), inermis, ramulis angulatis petiolisque pubescentibus, pinnis 2-3-jugis, glandulis scutelliformibus, foliolis 3-6-jugis oblongis acutiusculis planis glabris nudis, pedunculis folio sublongioribus, capitulis globosis, legumine stipitato lineari plano glabro tenuiter marginato, valvulis membranaceo-coriaceis.—*A. strigosæ* affinis quidem, sed plane distincta.—Interior of N. S. Wales, *Mitchell*.

222. *A. strigosa* (Link. Enum. ii. 444.), inermis, ramulis petiolisque pilosis pubescentibusve, pinnis parvis subbijugis, glandulis parvis scutelliformibus, foliolis 1-4-jugis oblongis obtusis margine subrevoluto serrulato-ciliatis, pedunculis gracilibus glabris folio longioribus, capitulis globosis parvis, legumine sessile lato-lineare plano marginato glabro, valvulis coriaceis.—*A. ciliata*, Br. in Hort. Kew ed. 3. v. 465. non Willd.—K. George's Sound, *Wakefield;* Swan River, *Hügel*.

223. *A. fagonioides* (sp. n.), glabra v. puberula, spinis axillaribus in ramulos spinescentes abeuntibus, pinnis unijugis solitariisve, foliolis 1-2-jugis late obovatis retusis crassiusculis glaucis, capitulis globosis glabris.—Spinæ numerosæ, fere semper gemmiferæ. Foliola pauca, 1-2 lin. longa, et sæpe vix angustiora. Pedunculi tenues 3-4 lin. longi. Capitula 6-10-flora.—Swan River, *Drummond*.

224. *A. pulchella* (Br. in Hort. Kew, ed. 3. v. 464.),

glabra v. ramulis petiolisque piloso-hispidis, spinis axillaribus subulatis, pinnis unijugis parvis, petiolo brevi submutico glandula longe stipitata, foliolis 4-7-jugis obovato-v. lineari-oblongis glabris nudis, capitulis globosis glabris, legumine anguste lineari marginato plano glabro.—Bot. Cab. t. 212.—Swan River, *Fraser*, *Hügel*, *Drummond*.—This is a very variable species, and perhaps ought to include the three following as varieties, or on the other hand, several forms here considered as mere varieties may be distinct species, but we do not as yet possess materials sufficient to determine the point.

225. *A. lasiocarpa* (Benth. in Hüg. Enum. 43.), ramulis hispidis, spinis axillaribus subulatis, pinnis unijugis, petiolo brevissimo longe aristato, glandula breviter pedicellata, foliolis 5-7-jugis linearibus hirtis, capitulis globosis, legumine anguste lineari marginato flexuoso hirsuto. — Swan River, *Hügel*, *Drummond*.

226. *A. hispidissima* (DC. Prod. ii. 455.), ramulis pubescentibus et piloso-hispidissimis, spinis axillaribus subulatis, pinnis unijugis, petiolo brevissimo submutico, glandula longe stipitata, foliolis 5-7-jugis oblongis linearibusve obtusis glabris nudis v. margine scabriusculis, capitulis globosis.—King George's Sound, *Fraser;* Swan River, *Drummond*.

227. *A. Cycnorum* (sp. n.), ramulis pubescentibus, spinis axillaribus subulatis sæpe deficientibus, pinnis unijugis, petiolo brevissimo submutico, glandula obsoleta, foliolis 3-7-jugis linearibus margine revolutis subciliatis, capitulis globosis.—Swan River, *Drummond*.—This appears to be wholly without the petiolar gland, but I have some doubt whether that character, any more than the breadth of the leaflets or the degree of hairiness in the above four species are at all constant.

228. *A. Drummondii* (Lindl. App. Bot. Reg. 15.), inermis, ramis petiolis pedunculisque tenuiter sericeo-puberulis, stipulis subulatis, pinnis bijugis, glandulis verrucæformibus sæpe obsoletis, foliolis 2-6-jugis oblongo-linearibus glabris,

cylindricis folia superantibus.—Habitu hinc *A. nigri-*
hinc *A. pulchellæ* affinis. Inflorescentia spicata 1-1½-
ris.—Swan River, *Drummond.*

IES IV. GUMMIFERÆ. *Stipulæ spinescentes. Plantæ*
m inermes. Folia bipinnata. Inflorescentia capitata
ata, simplex. Pedunculi subfasciculati axillares v. ad
ramorum subracemosi.—Frutices v. arbores in regione
utriusque orbis crescentes. Stipulæ subconnatæ sæpe
em planta diversæ, aliæ brevissimæ subulato-v. conico-
æ, rectæ rarissime recurvæ, aliæ maximæ, eburneæ
cæ subulatæ, crassæ v. inflato-corniformes, hæ sæpis-
vermibus punctatæ et verosimiliter ob hanc causam
nes. Folia in gemmis axillaribus sæpius fasciculata.
ula petiolaris rarissime deest, adsunt etiam sæpissime
, 1 v. plures, sub pinnarum foliolorumque paria su-
. Pedunculi plerique axillares, rarius foliis floralibus
ntibus racemosi. Bracteæ 2-4, connatæ, nunc ad basin
culi, nunc in medio pedunculo v. ad apicem sub floribus
Flores densissime capitati v. spicati. Bracteolæ
tæ, lamina parva ovata v. peltata, rarius minutæ incon-
. Ovarium sessile (an constanter?) glabrum. Legu-
arium.

s very natural series is chiefly characterized by the
s, and thus in most cases easily recognised, although
frastipulary aculei of the *Catechu* and allied species
e very much the appearance of spinescent stipules;
aculei are, however, never connate. The pod is so
le in the *Gummiferæ* that one would be tempted to
two or three distinct genera on some of the species,
e *A. Farnesiana* has already been separated under the
of *Vachellia*, now generally adopted, but on a closer
nation of all the materials before me, it has appeared
impossible to form any definite or natural groups,
st in the present state of our acquaintance with the
l species. Species with very different pods are often
ly to be distinguished when in flower, and if the fruit

alone be relied on, almost every gradation may be observed, from the thick, nearly cylindrical indehiscent pod, filled with a dry cellular pulp and crowded seeds of *A. Farnesiana, Cavenia*, &c. to the broad, flat, thinly membranous pod of *A. Jaquemontii.*

§ 1. *Summibracteatæ.* Inflorescentia capitata. Bracteæ sub capitulo ad apicem pedunculi. Legumen sæpius crassum plus minusve farctum, rarius planum coriaceum.—Species priores Americanæ, posteriores Africanæ.

229. *A. pennatula*, caule petiolisque tomentoso-lanatis, spinis rectis, pinnis 20-50-jugis, glandulis scutellæformibus, foliolis 20-30-jugis confertis minimis linearibus obtusis junioribus pubescentibus demum glabratis, pedunculis folio brevioribus crassis lanatis, capitulis tomentosis, calyce corollæ dimidio longiore, legumine lato-lineari subincurvo crasso-compresso non toruloso subcarnoso juniore tomentoso adulto glabriusculo, seminibus dissitis.—Inga *pennatula* Cham. et Schl. Linnæa, v. 593. — Mountains of Mexico, *Schiede, G. J. Graham, Hartweg, n.* 71.

230. *A. pellacantha* (Vogel, Leg. Meyen, 45), caule petiolisque tomentoso-pubescentibus, spinis rectis demum longissimis, pinnis 10-30-jugis, glandulis parvis scutellæformibus, foliolis multijugis parvis linearibus obtusis puberulis, pedunculis folio brevioribus crassis tomentosis, capitulis tomentosis, calyce corolla parum breviore, legumine lineari crasso compresso breviter velutino inter semina vix contracto, seminibus dissitis.—A præcedente differt spinis sæpius longioribus, foliis laxioribus, tomento tenuiore, legumine tenuiore, juniore rugoso. Variat spinis nunc 2-3 lin. nunc 2 poll. longis, tomentosis v. demum glabris, pinnis foliolisque majoribus minoribusve, glandulis paucis v. 15-16 in petiolo communi nonnullisque minimis in partialibus.—Lima, *Dombey, Meyen, Cuming, n.* 1013, *Mathews, n.* 437; Bay of Caraccas, *Sinclair.*

A. punctata, (Humb. et Bonpl. in Willd. Spec. iv. 1084.), which is unknown to me, may be the above species, or perhaps a variety of *A. Farnesiana.*

231. *A. macracantha* (Humb. et Bonpl. in Willd. Spec. . 1080.), caule petiolisque puberulis glabratisve, spinis ctis nonnullis longissimis lanceolato-subulatis, pinnis 10-30-gis, glandulis scutellæformibus parvis paucis, foliolis mul-ijugis parvis linearibus obtusis glabriusculis, pedunculis olio brevioribus tenuibus glabriusculis, capitulis puberulis, alyce corolla dimidio breviore, legumine lineari compresso rasso toruloso brevissime velutino, seminibus dissitis.—Frutex procumbens, *A. pellacanthæ* similis sed glabrior, edunculi longiores tenuiores, calyx brevior, legumen angus-ius, evidenter torulosum.

232. *A. macracanthoides* (Bert. in DC. Prod. ii. 463.), amis petiolisque tomentoso-pubescentibus, spinis rectis mi-nimis v. hinc inde longissimis, pinnis 12-40-jugis, glandulis parvis scutellæformibus, foliolis multijugis parvis linearibus obtusis puberulis glabratisve, pedunculis tomentosis folio brevioribus, capitulis subtomentosis, calyce corolla breviore, legumine lato-lineari subrecto crasso tomentoso, seminibus dissitis.—Vix ac ne vix ab *A. pellacantha* differt legumine crassiore majore non toruloso.—Jamaica, *Bertero*, *Bancroft*, *Macfadyen.*

233. *A. flexuosa* (Humb. et Bonpl. in Willd. Spec. iv. 1082.), glabra v. ramulis petiolisque vix puberulis, spinis ectis parvis v. hinc inde longissimis, pinnis 12-40-jugis, landulis parvis, foliolis multijugis parvis linearibus obtusis labris, pedunculis folio brevioribus, capitulis puberulis, egumine lato-lineari subincurvo plano crasso-coriaceo glabro, eminibus dissitis.—*A. obtusa*, Humb. et Bonpl. in Willd. pec. iv. 1087.—*A. subinermis*, Bert. in DC. Prod. ii. 463.—*A. aroma*, Gill, in Hook. Bot. Misc. iii. 206.?—*A. microcephala*, Macfad. Fl. Jam.—The *A. macracanthoides* and *subinermis* f Bertero appear to have been confounded together in ome of his sets, owing to their having been chiefly distin-uished by the thorns supposed to be very long in the one, nd very short in the other; both states may however be bserved on different branches of one specimen in either pecies. The real difference lies in the general smoothness

of *A. subinermis* (which I think I am correct in referring to *A. flexuosa*,) with a flat smooth pod, whilst *A. macracanthoides* (perhaps the same as *A. pellacantha*,) is much more downy, with a thick pod, with convex downy valves.—Jamaica, *Bertero*, *Mac Fadyen*; Vera Cruz, *Schiede*; Gallipagos, *Scouler*; San Juan, *Gillies*.

234. *A. tortuosa* (Willd. Spec. iv. 1083.), ramulis petiolisque tomentoso-pubescentibus, spinis rectis validis, pinnis 3-8-jugis, glandulis scutellæformibus paucis, foliolis 10-20-jugis linearibus obtusis puberulis, pedunculis capitulisque tomentoso-pubescentibus, legumine lineari crassiusculo tomentoso, seminibus dissitis.—*A. albida*, Lindl. Bot. Reg. t. 1317.—A prioribus differt, imprimis pinnis paucijugis. Folia fere *A. Farnesianæ*, a qua distinguitur tomento et legumine.—Jamaica, *Bertero*, *Bancroft*; Mexico, *G. J. Graham*?; Guayaquil, *Sinclair*, *Hartweg*, *n*. 656.—The Guayaquil specimens are rather less downy.

235. *A. atramentaria*, glaberrima, glaucescens, spinis brevibus validis, pinnis 2-7-jugis, glandulis parvis scutellæformibus, foliolis 15-20-jugis linearibus obtusis, legumine lineari-falcato crasso compresso glabro glauco.—*Prosopis astringens*, Gill, in Hook. Bot. Misc. iii. 204.—In flower this resembles some of the smoother forms of *A. Farnesiana*, but with thicker stems and a glaucous foliage. The pod is very different, and nearer that of *A. flexuosa*.

(*To be continued*.)

BOTANICAL INFORMATION.

Death of Mr. Matthews.

We regret much that we have to announce the death of Mr. Alexander Matthews, at Chachapoyas, on the Andes of Peru, on the 24th Novr. 1841. Next to Ruiz and Pavon, perhaps no one has so successfully botanized in Chili and Peru as Mr. Mathews; and his collections having been disuted to various subscribers, the interest and beauty of specimens are well known to many European botanists. eral of his plants are figured in our "Icones Plantarum," many more, we hope, will one day find a place in our ontributions to the Flora of South America." Two years , the climate of Peru, and arduous journeys, had already be- to make inroads on his constitution. It was in a letter to dated 9th July, 1839, from Lima, that he said, "I leave place again for the north, that is, for Chachapoyas and yobamba. My principal object in having come to this ce at this time, was on account of my health, which has ered considerably; indeed, so much so, that I was four nths confined to my room with a nervous fever;"—yet his our in pursuit of plants had not abated. "I now send ," he continues, "a very fine collection of plants and nerous drawings,* among which latter are ninety-three cies of *Orchideæ*. I do trust that my exertions will ntually be productive of some good to science. It is my ntion to dedicate some time to the botany of the middle s and the higher points of the Cordillera, about Cara- ca, Chachapoyas and the whole eastern side of the ridge n thence to Lima, where there is employment for some rs. As soon as I receive your answer, acknowledging present collection of drawings, I shall send you another equal in number to the present, and especially devoted to hideæ. Indeed, from what I see of figures made from d specimens, I am satisfied that nothing can more tend lustrate the structure of genera and species than having drawing made from the living subject."

he plants above spoken of were the last that were ived from Mr. Matthews; and on the 2nd of May, 1841, ast letter to us was written, speaking, indeed, of other ts, which, however, never came to hand. "It is now than a twelvemonth since I have been an invalid, ng suffered much the beginning of last year from severe

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hey were 233 in number, but representing 285 distinct plants, and they w in the hands of his friend and patron, J. Maclean, Esq.

rheumatism and nervous fevers, which for months rendered me entirely useless. Yet, at intervals, I have not been unmindful of my favourite pursuits, and have in reality continued to amass a very large collection of plants, among which are many new ones. And now that my health is improved, I intend to leave this place (Chachapoyas) in a few days, to join the Bishop of Maynas on his visit to the Missions of the interior, on the river Ucayalli, and as that district has not been visited by any men of scientific knowledge, I expect to find much novelty, and under the protection of the Bishop, shall have many advantages which I could not enjoy if I travelled by myself." Mr. Maclean, however, while at Liverpool, in December, 1841, received accounts from Lima, informing him that Matthews was too ill to undertake the journey, and in April of the present year, the same gentleman received the news of his death.

Sale of Mr. Lambert's Herbarium.

Before the present number of our Journal meets the public eye, one of the most extensive and valuable Herbaria ever formed by a private individual, and which had been thrown open during the greater part of the last half century, in the most liberal manner, by its late estimable possessor, to men of science of every country, will have been offered for sale in separate lots, and dispersed far and wide. We mean the costly collections of the late A. B. Lambert, Esq. The history, or rather a list of the various Herbaria forming this immense Hortus Siccus has been given by Mr. David Don, in the last volume of the "Monograph of the genus *Pinus*;" but since that period, there have been very considerable additions; nor did the venerable possessor's desire to increase his stores of vegetable treasures cease till within a very few days of his death.

The specimens, we believe, are prepared for sale by being arranged in bundles according to countries, or as the collections of some distinguished botanist or traveller. The whole f Sieber's, consisting of 1,100 species, are offered in six lots. Those from New Holland are exceedingly extensive, and omprize plants of White, Brown, Labillardière, Caley, King, Cunningham, Drummond, Lhotsky, etc. East Indian plants re those of Wallich, Hamilton, Roxburgh, Wight, Lady Amherst, Heyne, Law, and various others. The West Indian and South American collections comprise, besides he extensive herbarium of Dr. Gillies, those of Matthews, (whose death we have already noticed), Bridges, Cuming, Caldcleugh, Miers, Claussen, Pentland and Kelly (from Bolivia), Cavanilles, Hancock, Cervantes, Bonpland, Wiles, Browne, Martin (Guiana), Martius, etc. But the gem of he whole museum is the Peruvian Herbarium of Ruiz and Pavon. This is divided into three distinct sets; the first omprising fifty-three large bundles, and 2,300 plants; the econd in thirty-six large bundles; and the third, the rranged and mounted set in the large cabinet with three dditional bundles, to which are added seventy-five small oxes of dry fruits, sections of woods, barks, etc., and Ruiz nd Pavon's original manuscripts of their voyages travels nd botanical researches in Peru and Chili, between the ears 1777 and 1788, with their descriptions of plants, in-ects, etc.

In Mexican plants it is well known Mr. Lambert felt eculiar interest. They are from various sources; Tate, arkinson, Galeotti, Karwinski, Schiede and Deppe, Hartweg, a Llave, Staples, Haenke and various other travellers. rom North America the collection seems peculiarly poor; he Purshian Herbarium is only announced as containing from 50 to 1,000 species, probably not a fifteenth part of what re now known to be natives of that vast continent; to hese are added some from Nuttall, and sundry others athered by Menzies, Scouler, Douglas, etc. on the West oast. From China there are the herbaria formed by Sir eorge Staunton, collected during Lord Macartney's em-assy, several plants from Captain Beechey, and five bundles f miscellaneous ones.

Pallas' original Herbarium is amongst the more valuable of the lots; and, as stated by the late Mr. Don, it contains all the plants figured in Gmelin's *Flora Sibirica*, and also the identical specimens from which the figures in the *Flora Rossica* of Pallas were taken, as well as the figures of that author's Monograph of the genus *Astragalus*. Besides Russian plants, this set includes various collections communicated to Pallas by Thunberg, Sir Joseph Banks, Forster, Georgi, Steller, Merk, etc. and in all is said to include from 2,000 to 2,250 species. Among other plants of interest may be mentioned those from Japan; Schimper's and Salt's from Abyssinia; Drège's, Masson's, Niven's and others from South Africa; Hamilton's, Bennett's and Edgerley's from New Zealand; Thomson's, Hardwicke's and Colebrooke's from Madagascar; Colebrooke's from the Mauritius; others from the Isle of France; Bennett's and others from the Polynesian islands; Kotschy's Nubian and Æthiopian; Fischer's from Arabia, &c.; sixty bundles of specimens, including from 3,000 to 3,500 plants, "supposed" to have formed a part of Pallas'; Russell's and Lord Valentia's, and Hawkins' and Clarke's oriental plants; Afzelius' from Western Africa; Raffles' from Sumatra; Forster's Herbarium, collected during Cook's voyage; and lastly, we shall content ourselves with mentioning what formed a striking feature in the museum, the noble collection of the larger dried fruits, especially of *Coniferæ* and *Proteaceæ*.

It is much to be deplored that the late possessor's intentions, as specified in his will, respecting this vast assemblage of botanical objects, could not be complied with; namely, that it should, free of cost, be added to the National Herbarium at the British Museum.

Botany of the Azores.

The Azores, or Western Islands, lie so completely out of the track of vessels in general, that they are seldom visited by travellers, and still less by any scientific Botanists. It was, we know, the intention of Dr. Welwitsch, a German naturalist, to explore them about two years ago, and he proceeded as far as Lisbon, where he still resides; the difficulty of finding a passage, or some other circumstance, having prevented his reaching his place of destination. It was, then, most gratifying to us to be informed, by Capt. Beaufort of the Admiralty, that H. M. Steamer, "Styx," was, this spring, to proceed on a surveying voyage to the Azores, and that her commanding officer, Capt. Vidal, was quite willing to give, to a competent naturalist, the necessary accommodation on board his vessel, with every facility for prosecuting his researches during the summer and autumn in that interesting group of islands. The offer was made to our friend, Hewett Cottrell Watson, Esq., so well known by his researches on the geographical distribution of plants, and by him gladly accepted. The Styx sailed early in May, and we cannot doubt but Mr. Watson will return with ample materials for a flora of that insulated cluster, and valuable observations on the arrangement of the native species according to elevation, etc.

Further Botanical Intelligence from Swan River.

Again we have had the pleasure of hearing from our inteligent and industrious correspondent, Mr. James Drummond. I have now," he says, "collected sufficient specimens of ur Swan River Plants for fifteen distinct sets, each of about ,000 species, with tickets *fastened* upon each; and these earing corresponding numbers, I shall, by having the same umbers attached to my own specimens, be able to know xactly which I have sent away. Of these sets, thirteen I estine for sale, and take the liberty of placing them in your ands for that purpose. More than three-fourths of them ave been collected within the last six months, and I do hope at you will be pleased with them, as I have taken a good deal of pains in pressing and drying them. In general, I have gone over my old ground, where your own former set was collected, but I have elsewhere gathered plants which I did not meet with before, having made another excursion into the sandy country, Guangan. I detected two new *Eucalypti*, allied to your *E. macrocarpa* (see Icones Plant. Tab. 405 and 406), but I believe very distinct. I could only judge of them by the leaves and seed-vessels. Of one I shall send you capsules, the other was unfortunately lost on my way back. I also found two splendid *Verticordias*, of which I transmit specimens. That magnificent species, which has its inflorescence in whorls, and of which I communicated some account in a former letter (see the present vol. of this Journal, p. 92), bears flowers that are yellow on their first expanding, and, I expect, become ferruginous as they advance. I also met with a very handsome *Loudonia*, which I call *L. flavescens*; it is a much larger plant than *L. aurea* (Lindl.), and throws up numerous flower-stalks to the height of five or six feet, with sulphur-coloured flowers; but the seed-vessels are almost white. It grew in a spot which appears to have been formely a lake. *L. aurea* scarcely produces any mature seed. *L. flavescens* perfects seeds in abundance.

"I have detected, this season, a very remarkable aquatic of the *Alismaceæ* family, of which the expanded flowers are three inches in diameter, snowy white, with a crimson eye; the scent like that of *Nelumbium speciosum*. It is an annual, and grows in pools of water which become dry in summer. The leaves resemble those of our English *Alisma Plantago*, seven or eight inches long by two broad, and float on the surface of the water where it is two or three feet deep. But the remarkable circumstance connected with this plant is, that it bears, even while the plant is small, abundance of what appear to be fruit-stalks, sometimes two inches in circumference, which never reach the surface of the water, nor ever expand into a flower. They are terminated by what I consider seed-vessels, a sort of pouch, of them five inches in circumference, consisting of a h outer-covering, open at the top, and an inner oblong crowned with three minute scales, apparently the same hat enlarge, and, in the perfect flowers, form the three r divisions of the perianth. The bag, when cut open, und filled with a gelatinous fluid and numerous oblong s. Strange to say, it was at the time these were in ection, that the true flowers made their appearance, in h the three outer divisions of the perianth expand about nch, and the inner delicate ones, as before remarked, ches; these are beautifully plaited in æstivation. The nens, about half an inch long, are from ten to fourteen umber, sometimes united by the lower parts of their nents, into three bodies. The styles are seven or eight, so divided as to seem as if twice that number.* In Toodjay district I have seen the male flowers of *Vallis- a spiralis*, floating about among the leaves of this plant. it has now disappeared, and I do not know of its exist- at Swan River. I have found two species of *Isoetes*, one hem the European *I. lacustris*; and a *Pilularia*, probably *P. globulifera*.

On my route to King George's Sound, as noticed in my nal sent to you, I was much struck with a plant of the . Ord. *Scrophularinæ*, and this I have now found within miles of my present residence, on the top of some quart- hills. The seed-vessel is short, containing two cells, cell having a single seed. The corolla is deep purple; the most remarkable feature of the plant is its white or etimes blue-coloured calyx, which is permanent, and as wings to convey away the seeds as soon as they are . There are plenty of specimens. In this letter I en-

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he plant which Mr. Drummond has described, judging from the flowers he sed in his letter, is a *Damasonium* of Schreber and Brown (not of Jussieu), ging to the Nat. Ord. *Hydrocharideæ*. If introduced alive, it would be a ornament to the aquarium in our stoves or greenhouses. It is probably ent from the *D. ovalifolium* of Mr. Brown.

close for you what perhaps forms a new Proteaceous genus allied to *Lambertia*, but I have not seen the fruit."*

The copious collections, mentioned in the above extracts, are now on their way to England, on board the "Kilmaun," bound for London.

Histoire Naturelle des Iles Canaries.

We are happy in being able to state, that this valuable work is rapidly drawing towards its conclusion. The 63rd livraison has just reached our hands.

Voyage Botanique dans le Midi de l'Espagne, par Edmond Boissier.

We briefly announced the publication of this work at p. 311 of the present volume of this Journal. It has now advanced to twenty livraisons, and as far as the *Gramineæ*, following De Candolle's arrangement. Sixteen or seventeen only were promised, but no one will regret the extension of so excellent a flora of a country hitherto but very little known to the naturalist. While waiting for its completion, in order

Bossier.—*Spanish Botany and Voyage from Marseilles to Valencia.*—*(Continued from page 398.)*

For many years I had planned to visit Spain. Besides the attractions of its sweet and serene sky, its picturesque character and that peculiarity of aspect which still belongs to both men and things in this lovely land, I had a particular nterest in making this journey; for I hoped to obtain many ew and curious results from a scientific investigation of its roductions.

In common with the other natural sciences, Botany is now t a low ebb in Spain, its decline coinciding precisely with he epoch when this study received its greatest impulse in he other parts of Europe. Towards the close of the last nd the first few years of the present century, Spain occupied er proper and high place among the nations, in respect to cience; her vegetable productions, in particular, which had een already investigated by Clusius, Barrelier, Antoine, and ernard de Jussieu and Tournefort, were then the object of rdent study to Löfling, Quer, Ortega, and the learned Cavaillles: several magnificent establishments, almost wholly due o the munificence of Charles III., had been founded, as the otanic Garden of Madrid and several others in the proinces; and expeditions, planned on a gigantic scale, were espatched to various parts of America, which powerfully ontributed to make known the natural history of that ontinent. All this has been interrupted by the fearful truggle of independence, that noblest claim to glory for the paniards; many and painful have been the years that it as marked, but great will be the benefits that are yet to sult, and which will be reaped and appreciated from those rms of liberty and civilization that they have produced.

At the restoration of Ferdinand, many years of peace sued, during which the sciences began to be once more udied. Don Mariano Lagasca, a pupil of Cavanilles, ublished his *Nova Genera and Species*, and, seconded by veral scholars who sent him valuable materials from the fferent provinces, he aimed at compiling a *Spanish Flora,* which would have been valuable as the work of so eminent a Botanist. During its progress, the ill-faith and imbecility of that prince brought about the revolution of the Cortès, and Lagasca, who had ardently embraced the principles of liberty, was compelled, along with all the most estimable citizens of the land, to take flight, in consequence of the second French invasion; and his Herbarium, together with his manuscripts, which he carried about, most carefully, with him, were lost or destroyed upon the Guadalquiver, in the alarm of the retreat. From that time, Botany has fallen into a state of almost utter stagnation in Spain, and the Madrid garden and its valuable contents have been turned over to incompetent or destructive hands. Not a single descriptive work, worthy of mention, has since been undertaken. Lagasca, after a long exile, spent in England, returned home upon the decease of Ferdinand; but feeble health, joined to the discouragements which the loss of his materials and the want of kindred minds entailed upon this ardent naturalist, have prevented his ever resuming, with ardour, his favourite pursuits. He has, however, put into some kind of order the establishments confided to his care, and educated several students, who promise to deserve well of Spanish Botany when that land shall enjoy a breathing-space from the civil war and anarchy which now rend it in pieces, and when government is enabled to apply a portion of its resources to the encouragement of science.

Madrid is, just now, the only place in the whole Peninsula, where Botany can be tolerably learned. There are, certainly, several courses of lectures delivered on the subject at Barcelona, Valencia, and Cadiz; but they are purely theoretical, only intended to convey some superficial ideas to the young physician, and they have hitherto answered no practical purpose as respects an acquaintance with the *Flora of Spain*, which is the first foundation to be sought.

At this present moment, Spain is that country in Europe whose vegetation is least known, and this blank is much felt. Many of its provinces have never been visited by any botanist, and not one has been at all thoroughly studied,* the very portion that has attracted the smallest share of attention being the kingdom of Grenada, whose claims to notice are peculiarly great. Its position, the most southerly part of the Spanish Peninsula, its proximity to the African coast and the chains of lofty mountains which traverse it, must indubitably give birth to very varied aspects of vegetation, and present many interesting facts in botanical geography. To this new country, I proposed to direct my steps. The civil war which then, as indeed now raged in Spain, did not deter me; I foresaw, what events have unfortunately proved, that it was needless to wait in the expectation of its conclusion; this war, too, had never been quite permanent in Andalusia; and so far as concerned a traveller's personal safety and exemption from precautions, such a happy state of things had never existed in Spain, under any kind of government or at any one period. Various circumstances arose to produce delay, and I could not accomplish my departure from Switzerland till the latter part of March, 1837. This was rather later than I should have desired, for the southern regions which I designed to visit; but I was favoured by the very cold winter that had generally prevailed in Europe, and retarded the progress of vegetation. When I started, the neighbourhood of Geneva was covered with snow; at Lyons the snow had ceased, but the injury it had done was very evident, the *olive-trees* and *almonds* having been frozen while in flower; and at Marseilles, all the environs were still wrapt in the

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* All that we really know is the environs of Madrid and Aranjuez, in a

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very narrow circle, which were investigated by Löfling and Lagasca; some portions of Valencia by Cavanilles and Léon Dufour; on Arragon we possess nothing but the very incomplete work of Asso; the boundaries of the northern provinces have been visited, at different points, by Pyrenean botanists; and quite latterly the travels of Durieu into the Asturias, ably described by M. Gay, will give as much information upon the vegetation of those provinces. A short catalogue of the plants found near Cadiz and some specimens collected at Malaga by Salzmann, form the amount of our acquaintance with the productions of Andaluçia; while Gibraltar was visited by Picard, a French apothecary. Portugal is, perhaps, somewhat better known. The *Flora Lusitanica*, and the *Phytographia* of Brotero, are devoted to the vegetation of this country, as well as the unfinished work by Link and Hoffmansegg, which was begun on too expensive a scale to admit of its ever being completed.

sleep of winter. A few stunted plants of *Salvia clandestina* and *Alyssum maritimum* were all I could pick up at Notre Dame de la Garde, though the weather was clear and the sun brilliant.

On the evening of the 1st of April, I took my passage on board the steam-boat "the *Phocion*," for Valencia, whence I hoped to find the means of pursuing my journey.

When the annoyances and delays of the first departure are over, and the traveller has happily escaped from the trammels of passports and custom-house regulations, those two hindrances which bar alike egress and ingress in civilized countries, it is, indeed, delightful to cleave the liquid waves and to breathe the free air of the open sea. Marseilles, with its forest of masts and eminences, crowned with fortifications, soon appeared only like a whitish speck, which disappeared in the advancing gloom of night. The intermitting revolving lights from the Isle of Planet and the other beacon towers, rose bright on the horizon, as we proceeded on our way, lighted by the lamps suspended to our mast, gliding now and then past some motionless ship, which, like a nocturnal phantom, was waiting for the breeze, with furled sails and dropped anchor. It is seldom that the first night at sea brings much sleep; it takes some time to get used to the rolling of the waves, the creaking of the timbers, the narrow limits and incommodious shape of one's berth, and I was consequently stirring very early next morning, and found that we had passed the low mountains near Narbonne, and that the Pyrénées were in sight, among whose snowy and often cloud-capped summits, our sailors thought they could distinguish the *Canigou*. Soon the rocky steep of Roussillon rose before us in all its details; and the many ancient buildings, blackened by time, and crowning several conical hills, recalled the period when repeated incursions of Moors had rendered such posts of observation needful for the defence of the country. Leaving Collioure upon our right, we arrived before the little fortification which protects the anchorage of Port Vendres. This place consists of nothing more than a row of very shabby houses facing the port; but it has already exhibited some symptoms of increase since the intercourse which steam navigation has established between France and Spain, and it would become far more prosperous if the bason were deepened so as to allow the entrance of large ships of war.

A few hours' halt at Port Vendres, to enable us to take up passengers, gave me an opportunity of visiting the immediate environs. It was Sunday, and the deck of our *Phocion* was quickly crowded by the young country folks, who came to gaze and admire the mirrors, the gilding and the polished mahogany with which this vessel is adorned. On the quay, a detachment of soldiers were engaged in shipping off mules for the expedition to Constantine; the poor brutes were hoisted aloft by pullies and then dropped into the hold, spite of their struggles and resistance, which afforded high diversion to the bystanders. Vegetation looked much forwarder here than about Marseilles; the orchards behind the bay were full of *peaches* and *apricots* in full bloom, and the fields adorned with the beautiful *Narcissus Tazetta.*

From Port Vendres, as far as Roses, the shore presents one line of arid and steep promontories, and after making our way for three hours between several little rocky, mis-shapen islets, we cast anchor opposite Roses, just after passing the ruins of an old fortification, celebrated in ancient warfare under the name of the *Bud of Roses.* The bay is magnificent and extensive, hemmed in towards the back by rich plains, and terminated by the snowy peaks of the Pyrénées. Our French sailors envy Spain the possession of this port, which would be invaluable for their arrivals and departures for and from Algiers, as the crossing of the Bay of Lyons is always considered the most perilous part of the passage.

Here Spanish ground rose, for the first time, before my eyes, and eagerly was my curiosity roused; but there was no possibility of landing, the *sanatory regulations* not permitting us to disembark at any intermediate port, so I amused myself in walking the deck during most of the night, enjoying the clear and starry heavens, and watching the successive lighting up, first of the houses in the town, and then of the large fishing-boats, which enlivened the whole view by the torches kindled at their prows, whose trembling gleam was reflected in the waves beneath.

A good many Spanish passengers came on board early next morning, for the sea now affords the only practicable communication between this place and Catalonia, owing to the Carlists so intercepting the roads, that an escort, we were assured, is even necessary in coming to Roses from Figuieras, though but two leagues distant. Most of these people were peasants, or belonged to a body of irregular soldiery; they all wore what are called *espartillos*, shoes made of hemp, well adapted for mountain-climbing; but my endeavours to converse with them, and thus to get some practice in speaking the Spanish language, were not attended with eminent success, for though they seemed to comprehend my questions, I could make nothing of their answers, couched in a language which resembled the *patois* of the south of France much more than Castillan. Nothing can be more attractive than this Catalonian shore, and a month hence, when vegetation is in full beauty, must render it enchanting indeed. It presented a succession of mountains, highly varied in form, though not very lofty, all covered with maritime *Pines*, and between which, now and then, a smiling and well-cultivated valley opened down to the sea, embosoming, on its shore, a hamlet, consisting of brilliantly white houses. Every where the steamboat's signal brought out all the male population, invariably wearing red caps, to see us pass. This was the case in succession at Palamos, Sitges, San Feliu, and Lloret. All these places wore an aspect of order and prosperity, for they have suffered little from Carlist invaders, who meet with no sympathy on the coast; this is the most industrious and prosperous part of the country, and, perhaps, through all Spain, its inhabitants are well known for good ship-builders and hardy sailors, who often traverse the Atlantic in their small skiffs. Before reaching Mataro, the mountains had disappeared, the land became flat and fertile, villages were more umerous, and soon the clusters of intervening country-ouses united them to Barcelona, which spreads majestically ver a plain, lying at the base of a chain of verdant hills. outh of this town, and near the water's edge, rises a conical illock, named Montjouy, and surmounted by a fort, whose osition must render it almost impregnable.

The aspect of Barcelona is more European, and, therefore, ss striking to a stranger than that of almost every other ty in the Peninsula. The women, however, generally connue to wear the poetical mantilla; it is black, and trimmed ith lace in the higher classes, and white or coloured for the ther sorts of people. The head-covering which this article orms is eminently graceful, but some of the Barcelona *ashionables* are beginning to substitute a bonnet, which they ould presently discard if they were aware how much more ecoming is their national costume. The men of the lower rders wear the long cap, called a *gorra*, and which serves hem for a pocket and place of deposit for every thing they arry; they are picturesquely wrapped in their *mantas*, a quare piece of drapery, occasionally decorated with tassels nd embroidery, and, too often, fringed all round from much ear and poverty.

I had only an afternoon to spend at Barcelona, and had ut time to visit the port, the noble walk along the *Sea Wall*, nd the promenade called the *Rambla*, planted with trees and uch crowded with company; and in the evening I was preent at a *Tertulla*, a Spanish *soirée*, to which a friend was so ind as to introduce me, and where I found much less naonal peculiarity than I had expected, though plenty of the vacity, cordiality, and absence of pretension, which form ch pleasing traits of the different southern populations. here was dancing to the music of the pianoforte; not, hower, the *Bolero* and *Fandango*, but the *Mazurka*, *Galopade*, d newest Parisian *Quadrilles*. I noticed that several of e ladies were closely beset by their *cortejos*, a species of ver or betrothed admirer, who never moved from their des, but mounted guard over them with the most edifying avity and taciturnity.

Starting early on the 4th of April, we pursued our southward course, and caught a glimpse of Montserrat, a steep and cleft peak, through a gulley between the hills, the solitude and desolation of which admirably corresponded with the ideas of ascetic devotion that this place is considered to inspire. The loftiness and general appearance of Montserrat promise much botanical interest, yet it has only been visited by Quer, and some old authors. By mid-day we reached Tarragona, having passed, half an hour before, among the hills near the coast, a wood of evergreen oaks, which encloses a monument dedicated to the Scipios, and inscribed in a curious manner; but though the place was accurately pointed out to us, and it is not far from the town, the neighbourhood is so infested with bandits, that no one can venture thither without a strong escort.

Tarragona is large but dilapidated, and built on a rocky eminence, which it takes a full quarter of an hour to scale. Amid the Roman antiquities which abound here, I particularly admired the walls of Cyclopean architecture which formed part of the enclosure of the ancient city, and still more to my taste was the highly extensive view of the sea, of a rich valley sprinkled with villages, and the town of Reuss, two leagues distant. The garrison consisted of a few wretched looking soldiers, with tattered regimentals, and rusty muskets, while the repairs of the fortifications were actively proceeding, with the help of numerous bands of galley-slaves, chained in pairs and dragging along the carts of materials, uttering yells and songs which reminded me of the exultations of the inmates of *Dante's Inferno*.

The farther south we proceeded, the forwarder was vegetation. At Tarragona, the road-sides were decorated with *Asphodelus fistulosus* in full blossom, and the fields with *Hypecoum grandiflorum*, a beautiful species, hitherto only found in Roussillon, Catalonia, and round Madrid. We passed during night, the shoals of the Ebro, a spot where the low shore runs out so far into the sea, as to render navigation dangerous unless a very wide circuit is taken. By daybreak, after a rough night, we found ourselves crossing the ulph of Valencia, with Cape Oropesa to the north, and Cape t. Vincent to the south; the point of the latter, owing to s great distance, seemed as if detached from the land and rming an islet at some distance out to sea. The coast-line, etween these two capes, appeared to consist of irregular hains of rather low mountains, and the land was covered ith the brightest verdure, and studded with clumps of trees; very moment of our approach to shore, revealing some new harm and proclaiming the beauty of the kingdom of Valen- ia, long celebrated by poets and travellers as an earthly para- lise. Hardly had we arrived before Grao, the Port of Valencia, han we were hailed by the boat belonging to the French rig on the station, which was sent to warn us to be on our guard and only to land with great caution, as the country was in the utmost disorder from the approach of the Carlist troops, who, but the preceding evening, had come up to the very gates of Grao. The inhabitants could not venture to pass the nights, except on board some small ships. It was unpleasant enough to land in such a scene of confusion, but there was no help for it, as the "Phocion" was to start the same evening on her return to France. A swarm of porters and *tartaneros,* (the latter drive a sort of cart) was awaiting our arrival at the jetty to wrangle for our custom, which they did with an asperity that reminded me of the Neapolitans, though the countenances of the people of Valencia were still more fierce and resolute. The custom-house was in operation, but its functionaries were too mortally afraid of the Carlists, to detain us long; for, not daring to pass the night at Grao, they always retired early every evening to Valencia. This capital s but a short league distant from the sea, and the road was uckily open, the Carlists entertaining a very misplaced fear of eing cut off by sallies from the city, if they advanced too far n this direction. The distance is performed in *tartanes,* mall two-wheeled vehicles, not hung on any kind of springs, ollowed below, and resembling a little *omnibus*; the driver its with his legs hanging over a plank at the side. Never as I so fearfully jumbled in my whole life, my breath was almost taken away, and yet my sufferings could not prevent my admiring the beautiful scenery which we traversed, one of the finest parts of the celebrated *Huerta de Valencia*. The entire country resembles a vast garden, excellently cultivated and smiling with verdure, watered with innumerable rivulets, and shaded with forests of *mulberry* and other fruit-trees, among which, here and there, starts up the wavy summit of a *Palm*. Many little white dwellings might be seen dotting the scenery; they are all built on one plan; a thatched roof and a cross upon each gable are common to the whole, and they serve as the habitations and granaries of the *labradores*, or husbandmen, who cultivate the land. A quarter of an hour before we reached Valencia, the cupolas and towers of its public edifices might be seen, glittering in the sun's rays, and soon we reached the banks of the Guadalquiver, which, on this side, skirts the walls of the city. The numerous bridges which traverse this river, the many triumphal arches and extensive convents which it contains, recall to mind the splendid times of the Spanish monarchy, and offer a striking contrast with the present poverty and terror of the city. All seemed deserted, we tried first one of the gates, and found it fast shut, for the purpose of defence; so was a second; and a third was only partially opened after a considerable delay, and several sentinels mounted guard before it. The inhabitants were busy setting cannon on the wall which encloses the city, but I could not help observing the want of order and of watchfulness which marked their proceedings, many of the lowest parts of the wall being quite undefended, while the utter absence of advanced guards would have made it easy enough for any enemy to approach under cover of the houses and trees with which the *Huerta* is interspersed. And yet the inhabitants of Valencia had lately received a terrible lesson; Cabrera, the triumphant Carlist chief, but two days before my arrival, deployed his army at Burjasot, only a mile and a half distant; and there, almost within sight of the people of Valencia, he caused twenty-nine officers, whom he had taken prisoners, to be shot, military music playing all the ile, and utterly unmoved even by the enormous ransom at ich several of those unfortunate men offered to purchase ir lives. Will it be believed that this butchery took place ore the walls of a city which contains 100,000 souls, ether with 4000 well armed soldiers of the national ard, and yet not an idea of a sally and rescue was ertained!

Misery prevailed in Valencia; provisions were very scarce l dear; for Cabrera had issued a proclamation, declaring t any muleteer, who should attempt to convey articles ther, was liable to the seizure and confiscation of his mule and lading, and even to death, in case of resistance. The silk-rkers, a numerous body of men at Valencia, were reduced the deepest poverty, and it was deplorable to see many of ese people, decently attired, who asked for charity at the rner of the streets and by the church gates, covering their ces with their mantas.

It may well be supposed that I had no desire to remain in is unhappy place a moment longer than was necessary, and et I was delayed nearly ten days, for want of the means of ursuing my way to Andalusia, whither I hoped to proceed some small vessel, bound for any port in that province. was a vexatious circumstance, too, that the dis-rbed state of the environs would not allow me to go out of e city, even so far as Murviedo, the ancient *Sagontum*, only ur leagues off, which I much desired to visit. Valencia, like Barcelona, has preserved all the character of Spanish city of the middle ages. A perfect labyrinth of rrow, unpaved, and crooked streets, through which it is ficult to make one's way, marks the style of building preva-t among the Moors, who then swayed the land. At almost ery step, you come upon little black crosses, plastered to walls and bearing an inscription which points out the ot where an assassination had taken place. For what son I cannot imagine, these crosses are called in Spain *ilagros,*" or miracles, a term which might imply the un-quency of the crime which these memorials, on the con-ry, so numerously attest.

Every morning may be seen the *labradores* busy in collecting and loading their mules with the soil of the streets, which is valuable as manure; the clothing of these men is highly picturesque, consisting of a loose blue jacket, without sleeves, and made of a coarse velvet; very wide linen pantaloons, which only come down to the knee, and are so full as to resemble a petticoat; and legs, that are bare, except short socks, and the ribbons which fasten their *espartillos*. Their head-gear consists of a blue cap, or a plain kerchief. This light, and almost African costume, forms a remarkable contrast to that of the grave citizen of Valencia, wrapped from head to foot in his sombre cloak: one would think they belonged to different races of men, created for opposite climates.

South of the city, lies the great salt lake of Albufera; and even from a distance, their peculiar tint displays the rice-fields which surround it. The system of irrigation pursued in this neighbourhood, is well known to have been the work of the Arabs; and so admirably is it contrived, that the waters of the river, though but scanty in summer, suffice to fertilize four or five square leagues of land.

In the market-place, I was interested in observing the peculiar vegetable productions of the country; the *chufos*, which are the tubercles of *Cyperus esculentus*, possessing an agreeable nutty flavour, and sent all over the Peninsula, from hence, in order to make orgeat; the *Cacahuetes*, which consist of the subterranean pods of *Arachis hypogæa*, and the young shoots of *Palmitos* or *Chamærops humilis*, here eaten raw, with oil and vinegar. There were also *Dates* in considerable quantities, but like the olives, so austere, as to require preparation; and I observed several kinds of *snails*, vended as food, *Helix aspersa* and *Alonensis* being the most plentiful.

I did not fail to visit the *Botanic Garden*, an immense enclosure, situated outside the walls of the city; but, though the aspect is excellent, the soil admirable, and the whole place well irrigated, possessing, too, the advantage of a climate that would bring almost any production of tropical lands to tolerable perfection, the establishment is given up to neglect and desolation. Here and there a few plants appear to attest its past splendour, as a magnificent bush of *Mahonia fascicularis*, more than twenty-five feet high, and in fine flower, with *Buddlea globosa* of about equal size, and gigantic specimens of *Chamærops*. This garden still affords a few specimens of medicinal plants to the young students; but as to Botany, properly so called, no person, I believe, in all Valencia, pays the least attention to it. I was told of a physician, whose herbarium was an honour to the city, and I lost no time in endeavouring thus to gain some acquaintance, as I hoped, with the vegetation at least of the environs; but great was my disappointment in finding that this vaunted collection consisted entirely of garden specimens, wretched scraps, stitched down to paper, after a most primitive fashion. It was amusing to hear the ancient housekeeper, who displayed this precious *hortus siccus*, and kept continually assuring me that I had there, before my eyes, "*todas las yerbas del mundo*."

(*To be continued.*)

Notice of the Life and Labours of A. GUILLEMIN, M.D., *Assistant Naturalist at the Museum of Natural History of Paris, Member of the Philomatic Society, &c., by* M. A. LASÈGUE.*

A fresh loss was added, on the 15th January, 1842, to those which science has recently had to deplore, in the death of M. Guillemin, who, though still in the prime of his days, closed, at Montpellier, a life which had been successfully devoted to the study of the Natural Sciences, and of Botany in particular. It is often alleged that we only know the value of our friends when they are taken from us; but those who prized M. Guillemin can hardly allow that his merits required this melancholy proof of their worth.

Antoine Guillemin, (not Jean-Baptiste Antoine, as even he erroneously designated himself), was born at Pouilly-sur-Saone, in the canton of Seurre, and arrondissement of Beaune, (Côte d'Or), on the 20th of January, 1796. His education was conducted at the College of Seurre, where he was one of the most distinguished pupils, and on his quitting this institution he was placed with a lawyer, with whom he continued a year and a half, when his love for chemistry, and a strong desire to obtain a commission as an army apothecary, at a period when it was difficult to escape the conscription, induced him to abandon the study of the law. In 1812, he became a pupil of an Apothecary at Dijon, and after remaining two years in that city, he proceeded to Geneva. There, in 1815, Guillemin made the acquaintance of M. De Candolle, whose instructions, joined to the learner's innate partiality for the natural sciences, finally decided his future career. From this period may be dated an ardour, which never abated for the study of plants, and which, on one occasion, had like to have proved fatal; for while botanizing on the Alps, he fell and broke his right arm. The fracture was very serious, and occasioned long and severe suffering; amputation was at one time threatened; but though Guillemin was so happy as to escape this misfortune he never entirely recovered from the consequences delightfully encouraging to the young stranger, and deeply did he feel the many marks of favour subsequently bestowed on him; throughout his life, and to the very close of his days, he took pleasure in speaking of his first arrival in Paris, and of the gratitude and veneration he owed to M. Delessert.

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* Since published in the *Annales des Sciences Naturelles.*

Similar were the sentiments with which he regarded the learned Genevese Professor, whose instructions were never effaced from his mind, and whose name he never pronounced without adding to it some expression of the respect that he deemed due towards the *savant*, who had first introduced him to the world of science. M. De Candolle had possessed greater opportunities than any other person for estimating Guillemin's abilities, and he had long foreseen and declared that this youthful student would prove a highly distinguished Botanist. While the pupil felt a real affection for his instructor, the master entertained similar sentiments towards his pupil; and, far from ever forgetting him, M. De Candolle, shortly before his death, recollected Guillemin, and reckoning that, in the course of nature, the latter would be long the survivor, he appointed him, in his will, the Editor of a new edition of his *Elementary Theory of Botany*, that remarkable work, which, at the period when it first appeared, opened a new path to science, and will always remain a monument of the genius and philosophical mind of its author. Gratefully did Guillemin accept the task; a last and valuable bequest of the man whose name will be known so long as Botany shall be studied. He felt it right to preserve the work entire—he would have deemed it profanation to alter a word of the text; but it is likely that some notes would have been appended, with explanations of newly adopted botanical terms, and he had expressed his intention of prefixing a memoir of the life and writings of M. De Candolle. Who more fitted than the pupil to perform such an office—where could the individual be found who would so justly appreciate the merits of his subject?—But, alas! the opportunity was never granted!

Under a plain exterior, and the simplest manner, Guillemin possessed a highly cultivated mind, and very extensive information; and being ever prompt to impart, with utter forgetfulness of self, his stores of knowledge to every person whom he could thus benefit, it may readily be supposed that he was consulted both by the ignorant and the learned. How many ingenious observations and elevated ideas were gathered from his conversation! The kind of negligence which pervaded his manners would have induced no one to suspect how powerful and retentive was the memory he possessed: but never a book, or figure of a plant, had he so slightly glanced at, but he distinctly remembered, and could instantly recall and refer to them at need. He was aided, in his determination of plants, by a most skilful, correct, and rapid eye; and every botanist who has had occasion to consult the splendid collections of M. Benjamin Delessert, has been delighted by M. Guillemin's obliging readiness to aid their views, and astonished with his extensive information. In 1827, he was nominated *Botanical Assistant* to the *Paris Museum of Natural History*, and as he was able to hold this office, along with his employment in M. Delessert's herbarium, he formed, as it were, an useful link between these two valuable public and private collections, the *Jardin* clearly and precisely, the general structure and anatomical composition of *pollen*, and pointing out its similarity of form in a certain number of natural families, he shows that it may be usefully employed in characterizing the families.

Flora of Senegambia, published with MM. Achille Richard, and Perrottet.

Memoir on the Pylostyles, a curious and novel genus in that most singular family, the *Rafflesiaceæ*.

Zephiritis Taitensis, a small work, which, with reference to the vegetation of the Society Islands, and especially Tahiti, contains some interesting information on botanical Geography. Independently of these and various other scientific labours a vast number of articles scattered in different works attest the aid which Guillemin lent to botany. For five years he was chief editor of the botanical portion of Ferussac's *Bulletin Universel*, and Professor of Botany, for three years, in the *Horticultural Institution*, at Fremont, whose *Annals* he enriched with a treatise on *Botany and Vegetable Physiology*. He had originated, in 1833, the *Archives of Botany*, a well-executed compilation, long supported by the generous aid of M. Delessert, and afterwards joined to the 2nd Series of the *Annals of the Natural Sciences*, which Guillemin edited, jointly with M. Adolphe Brongniart.

Guillemin laid down his pen to resume it no more, after having given in these *Annals*, the character of *Jaubertia*, a new genus of plants; dedicated, at the desire of M. Delessert, o an ex-minister and member of the Chamber of Deputies, he Count Jaubert, whose important duties could not so ngross his attention as to prevent his studying Botany, and nding in this peaceful employment an agreeable relaxation rom the harass of politics.

It had been easy for an individual, endowed with such cility of composition and compilation as Guillemin, to have ft many more works; but his versatile turn of mind unfitted im for any long-sustained labour. The protracted application hich would have been requisite was peculiarly fatiguing to him. And had not his communicative disposition induced him to diffuse, by conversation, the stores of knowledge which he possessed, how much would science have lost! In the frankness of intimacy, Guillemin was seen in a most favourable light. His cheerful, philosophical, and playfully satirical turn of mind was then freely developed, and his conversation was replete with anecdotes, and lively incidents which his memory had laid up in store, culled, nobody knew how or where. Kind and benevolent, he envied not the celebrity of others, and though his observing turn of mind rendered him peculiarly alive to a sense of the ridiculous, his criticism was never such as to wound.

In July 1838, the subject of this sketch was charged by the Minister of Commerce and Agriculture, to investigate the culture and preparation of *Tea*, as pursued in Brazil, and to bring from thence the plants which government desired to naturalize in France. He accordingly started in August, immediately after having been admitted a Member of the *Apothecaries' Company*, in Paris. On reaching Rio Janeiro, he acquitted himself of his mission with all possible zeal, and a year afterwards he returned to France, with 18 cases, containing 1500 Tea plants, out of 3000 which he had procured in Brazil, or raised from ripe seeds sowed in the spaces between the growing specimens. He also brought home a great many samples of the woods that are used in dyeing and cabinet-work, and an immense number of substances that compose drugs, the correct determination of which would prove desirable to commerce. In consequence of this mission, which he reported most fully to the minister on his return, Guillemin received the decoration of the *Legion of Honour;* a reward justly due both to the zeal and intelligence displayed on this occasion, and to those labours which had previously gained him a rank among the most skilful of botanists.

Latterly, his health became seriously impaired by an organic affection, and the medical advice of his anxious friends was ineffectual to arrest the rapid progress of disease.

Though he had himself been admitted as an M.D. for ten years, he had paid little attention to the treatment of maladies, and hence, perhaps arose his scepticism on the subject of medical therapeutics. The alarming state of his health compelled him to apply to a physician, who thought that a southern climate would prove beneficial, and accordingly, in the month of January 1842, with a temperature at six degrees of cold by Reaumer's thermometer, he quitted Paris to seek the usually milder atmosphere of Montpellier. Unfortunately it so happened, that contrary to the customary order of things, the cold was still severer in the south than the north of France, and the long journey, though not much complained of, must have been very trying to him in such weather. The affection and skill, however which awaited him at Montpellier, revived his hopes of recovery, and full of confidence in the mode of treatment pursued, and gratified by his nomination as Member of the Parisian school of Pharmacy, he wrote home, assuring his friends that in a month's time, he felt sure of being well. And a few days sufficed to remove him from his friends, his family, and science !

M. B. Delessert always felt a deep interest in Guillemin, and received, with much emotion, the sad tidings of his decease. Long must it be ere any of his friends can forget him ! Upon me, his fellow labourer and colleague in the botanical museum of M. Delessert, me, whom for ten years he had admitted to his kindly intimacy, has this melanholy office devolved of tracing the incidents of his life, and thus recording alike my regret for his death, and my sense of is worth.

In the list of Guillemin's publications, amounting to thirty, nd chiefly consisting of detached memoirs which appeared the larger periodical works, besides those mentioned already, e following are the most important.

Icones Lithographicæ Plantarum Australasiæ rariorum, 4to with 20 plates.

The text of the 29th and 31st numbers of *Redouté's Plantes*

Grasses, and almost all the articles on Botany and Medical Natural History in the *Dictionary of Materia Medica.*

The family of Guillemin were of opinion that his wishes would be best fulfilled by presenting his herbarium to the Cabinet of Natural History, in the town of Dijon; with the exception of some very rare species, which were taken out and given to the Museum of Natural History, in Paris, according to their deceased possessor's express directions.

British Willows.

We are happy to learn that the Rev. J. E. Leefe of Audley End, Essex, is assiduously engaged in studying the British Willows, with the intention of laying the result of his labours before the public, in fasciculi of specimens, at the cost of a few shillings each. The first fasciculus, containing upwards of twenty species, and fifty or sixty specimens, it is expected, will be ready in the course of the next two months.

Mr. Leefe will have the able assistance of Mr. Borrer, in reference to the correctness of the nomenclature; but in regard

arrangement and definition of the Genera of Ferns, with
observations on the affinities of each genus. By J. SMITH,
A. L. S.

(*Continued from page* 198, *of the preceding volume).*

Tribe VI. DICKSONIEÆ, *J. Sm.*

Sori marginal, round, globose, vertically oblong, or trans-
rsely elongated, furnished with a special interior attached
eral *indusium*, which connives more or less with the
anged indusiiform margin of the frond, and forms with it
urceolate, calyciform, or bilabiate cyst, or marginal groove,
ntaining the *sporangia.*

Obs. The general feature of this tribe is exhibited by the
nera *Lindsæa*, *Davallia*, and *Dicksonia*, as also *Tricho-*
mes, and *Hymenophyllum*, as characterized by Swartz, Will-
now, and others, and which may be viewed as a tribe form-
by a combination of the characters of *Aspidieæ*, and
erideæ ; the special interior attached indusium being ana-
ous to the lateral indusia of many *Aspidieæ*, and the
anged or indusiiform margin being analogous to the exterior
ached indusium of *Pterideæ*, or even more analogous to
se genera of *Polypodieæ*, in which the margin is revolute
l indusiiform : these tribes have more or less affinity with
h other in the habit and character of some of their genera.
e principal distinction between *Aspidieæ* and the present
be is in the sori of *Dicksonieæ* being seated under or on
immediate margin, or projecting beyond the margin in
form of fertile crenules; but exceptions to the strictness
this character are exhibited in some species of the genera
mata and *Leucostegia*, the sori of which are slightly in-
marginal with a simple reniform or vertically oblong in-
sium, the marginal or accessory indusium being scarcely
nifest ; therefore, in such cases, it becomes difficult to
aracterize them from *Nephrolepis*, and some species of
strea, while their habit indicates them as having more

affinity with other genera of this tribe than with any in *Aspidieæ.*

Dicksonieæ contains about 200 described species, presenting the utmost extremes of habit; a number having small, very membranous fronds, scarcely an inch high, rising from a slender creeping rhizoma; while others attain the length of several feet, and are produced from a thick creeping or erect caudex, which in the latter case attains the height of 50 or more feet; the genera *Trichomanes* and *Hymenophyllum* being examples of the first extreme, as *Dicksonia* and its allies are of the other.—It may, therefore, appear unnatural that genera of such extreme habits should be placed in the same tribe; but upon a due examination of the transitions of form exhibited by this tribe, I cannot otherwise naturally arrange them; and a difficulty even arises in finding sufficient difference of structure to characterize the several groups that the difference of habit indicates as being distinct.

The tribe presents, at least, four natural subdivisions, but which cannot, with any degree of precision, be characterized from each other by any definite character derived from the sori or venation; for, with the exception of a few species, the venation is direct and free, and the difference of structure of the indusium presents a gradual transition from one group of species to another, differing chiefly in texture and its manner of connivence with the accessory indusium. I have therefore deemed it best to designate the sections by the names of the genera under which the generality of the species formerly stood, viz., *Lindsæa, Davallia, Trichomanes,* and *Dicksonia.*

Sect. I. LINDSÆÆ, *J. Sm.*

Sporangia pedicellate, produced from an elongated transverse anastomose or rarely simple terminal receptacle; *indusia* plane, bilabiate.

97. ISOLOMA, *J. Sm.*

(Lindsææ *sp. Wall. Hook. et Grev. Presl.* Vittariæ? *Wall. herb.*).

Costa central; *veins* forked; *venules* direct, their apices nsversely combined by a continuous sporangiferous recep- le; *special indusium* linear, plane, equal with the indusii- m margin; *sporangia* vertical.

Fronds *from* 1 *to* 2 *feet high, linear, pinnate;* pinnæ *ob- g-elliptical, or lanceolato-falcate, truncate or auriculated the base;* petiole *short, articulated with the rachis, smooth pubescent;* veins *free in the sterile pinnæ.*

Species. 1. I. lanuginosum, *J. Sm.* (Lindsæa *Wall.* Vit- ia? *Wall*). 2. I. divergens, *J. Sm.* (Lindsæa *Hook. et* ev. Vittaria *Wall.*)

Illust. Hook. et Grev. Ic. Fil. t. 226.

Obs. The two known species which I have placed in this us are so similar in habit to several species of *Nephro- is*, that in the absence of sori they would readily be wed as belonging to that genus; but the continuous sorus ws their affinity to *Lindsæa*, as hitherto characterized. t the peculiar habit of *Isoloma* is at variance with every wn species of *Lindsæa*, and is more particularly exem- ied in the deciduous nature of the pinnæ, the petiole ng articulated, as in *Nephrolepis, Didymochlæna, &c.* It agrees with these genera by the apex of the sterile ules, (which is usually thickened), producing a white lky substance in the form of a dot on the superior side r the margin of the frond, forming a conspicuous mar- al row. These characters are not found in any species of *dsæa*, as now characterized; and *Isoloma* also differs in ing a true central mid-rib, which in *Lindsæa* is eccentric, entirely absent. This very distinct habit has, therefore, uced me to separate this genus from *Lindsæa*; and I y also mention that the sporules of *Lindsæa* are globose, l angular, while in *Isoloma* they are elliptical, slightly reni- m and smooth, like the sporules of *Nephrolepis.*

98. Schizoloma, *Gaud. J. Sm.*

(Lindsææ *sp. Dry. Lab. Sw. Kaulf.* Pteridis *sp. Auct.*).

Costa central. *Veins* forked. *Venules* anastomosing, forming elongated oblique areoles, transversely combined at the margin by a continuous sporangiferous receptacle. *Special indusium* linear, usually equal with the plane indusiiform margin. *Sporangia* vertical, rarely spreading.

Fronds *simple, cordate, trifid or pinnate, rarely bipinnate;* pinnæ *linear-lanceolate, or ovate-oblong, entire, smooth, fertile on both margins, not articulated with the rachis.*

Examp. 1. S. cordatum *Gaud.* 2. S. lanceolatum *Lab.* 3. S. ensifolium (*Sw.*) (Pteris stricta, *Lam.* P. angulata, *Presl.* P. angustata, *Wall.*) 4. S. heterophyllum (*Dry.*). 5. S. macrophyllum, (*Kaulf.*). 6. S. Guerinianum, *Gaud.*

Illust. Gaud. in Frey. Voy. t. 16, 17, 18. *Hook. et Grev. Ic. Fil. t.* 111. *Hook. Gen. Fil. t.* 63. B.

Obs. The reticulated venation distinguishes this genus from the preceding, and also from *Lindsæa*, under which the species were originally placed.

99. Dictyoxiphium, *Hook.*

Costa central, venation nearly uniform, compound, anastomosing, with variously directed free veinlets terminating in the areoles. *Sporangiferous receptacle* continuous. *Indusium* linear, nearly equal with the indusiiform margin, constituting a linear continuous sorus. *Sporangia* stipitate.

Fronds *cæspitose, simple, entire, smooth, linear-lanceolate, attenuated and decurrent on the stipes, from 2 to 3 feet in length, and 2 to 2½ inches in width, the fertile usually contracted and linear;* costa *prominent, venation internal.* Sori *occupying both margins of contracted fronds.*

Species. D. Panamense, *Hook.*

Illust. Hook. Gen. Fil. t. 62.

Obs. Sir W. J. Hooker was the first to describe this rare fern, from specimens collected by Mr. Cuming in the isthmus of Panama, and which specimens I have been kindly permitted to examine. On looking at the habit and venation of this fern, it might readily be taken for specimens of *Drynaria irioides*; but the continuous marginal sorus, with the interiorly attached special indusium, prove it to belong to *Lindsææ*, and the compound venation readily distinguishes it from all other genera of this tribe. In habit and position of the sori, and nearly also in venation, it agrees with *Drymoglossum lanceolatum*, the presence of an indusium in the present genus being the chief distinction. With *Schizoloma* it coincides in aspect and texture, but is distinguished by the free veinlets terminating in the irregular areoles.

100 LINDSÆA. *Dry.*

Costa excentric or wanting; *veins* radiating, forked; *ve-ules* direct, their apices transversely combined by a contin-ous sporangiferous receptacle. *Special indusium* linear, sually shorter than the indusiiform margin, constituting a ontinuous sorus.

Fronds *simple, cordate, pinnate or bipinnate*; pinnæ *ob-ng dimidiate, flabellate or lunate, the superior margin only rtile, entire or rarely dentate*; *the sori then interrupted.*

Examp. 1. L. reniformis, *Dry.* 2. L. sagittata, *Dry.* L. elegans, *Hook.* 4. L. falcata, *Dry.* 5. L. brevifolia, *einw.* 6. L. cultrata, *Sw.* 7. L. Guianensis, *Dry.* 8. L. apeziformis, *Dry.*

Illust. Lins. Trans. vol iii. t. 7, 8, 9, 10. *Schk. Crypt. t.* 14. *Hook. Gen. Fil. t.* 63. A.

Obs. The direct free veins of the sterile fronds and the nilateral sori distinguish this genus from any of the pre-ding.

101. SYNAPHLEBIUM, *J. Sm.*

(Lindsææ *sp. Reinw. Wall. Blume*).

Costa excentric or wanting; *veins* forked; *venules* angu-rly anastomosing, and combined at the margin by a con-nuous or interrupted sporangiferous receptacle. *Special dusium* equal with the indusiiform margin, constituting con-nuous or oblong sori.

Fronds *pinnate or bipinnate*; pinnæ *oblong, dimidiate, the superior margin fertile, entire or obtusely crenate, the crenules soriferous.* Sporules *angular.*

Species 1. S. recurvatum (*Blume*), (Lindsæa serpens, *Wall.*) 2. S. davallioides (*Blume*), (Lindsæa lobulosa, *Wall.*) 3. S. obtusum, *J. Sm.*

Illust. Hook. Gen. Fil. t. 101.

Obs. Agreeing in habit with *Lindsæa*, but differing in the venules being simply anastomosed, similar in that respect to *Schizoloma*, but differing from that genus by the midrib being excentric and bearing the sori on the superior margin only.

102. ODONTOLOMA, *J. Sm.*

(Davalliæ *sp. Presl.* Lindsææ *sp. Reinw.*).

Costa excentric or wanting. *Veins* forked; *venules* direct, their apices free and sporangiferous. *Special indusium* subrotund, shorter than the indusiiform margin. *Sori* round, confluent or distant.

Fronds *pinnate or bipinnate*; pinnæ *oblong-dimidiate, the superior margin nearly entire, or dentate, or laciniated, the dents and segments obtuse and unisorous, distant or conti-*

Sect. II. DAVALLIEÆ, *J. Sm.*

orangia pedicellate, produced from a simple terminal tacle. *Special indusium* usually more or less attached base and sides, rarely attached by its base only, its pex mostly equal with the concave indusiiform margin, ng an urceolate, bilabiate or tubular vertical cyst.

103. HUMATA, *Cav.*

(Davalliæ *sp. Sm. et Auct.*)

ins simply or pinnately forked; *venules* direct, thickenpwards, their apices free and sporangiferous; *indusium* tund or reniform, shorter or nearly equal with the in, usually plane, its sides free; *sori* round; *sporangia* al.

onds *coriaceous, simple, linear-lanceolate, entire or sinuous, ltoid and pinnatifid, the lower segments usually deeply ited;* veins *immersed, all, or the lower exterior e only soriferous;* sporangia *usually vertical,* sporules e.

ecies. 1. H. angustata (*Wall.*) 2. H. ophioglossa, (Davallia heterophylla, *Sm.* D. lobulosa, *Wall.*) 3. H. a, (*Sm.*) 4. H. pinnatifida, *Cav.* 5. H. trifoliata, 6. H. pectinata, (*Sm.*) 7. H. Gaimardiana, *J. Sm.* hrodium, Gaud).

ust. Hook. et Grev. Ic. Fil. t. 139, 230. *Gaud. in Freyc. t.* 12.

s. Although the habit of the species constituting this is very distinct from either the preceding or following , yet there is little or no real difference in the character ir sori, to justify the necessity for their being separated; evertheless, as in other cases, it appears to me that it e better, for the purpose of arrangement, to consider as distinct groups, the thick veins and coriaceous texf the indusium will assist in determining *Humata* from roximate genera. I have already noticed that a transis formed from *Aspidieæ* to this tribe through *Nephro-*

lepis with *Humata*, and setting aside habit, it becomes difficult to point out a technical character that will readily distinguish them, and which is particularly the case with *Humata Gaimardiana*, the sori of which are seated a little within the margin as in *Nephrolepis*, while in habit it agrees with the other species of *Humata*, and on the whole evidently has more affinity with *Davallia*, than with genera in *Aspidieæ*.

104. LEUCOSTEGIA, *Presl, J. Sm.*

(Davalliæ sp. *Auct.*)

Veins forked ; *venules* direct, equal, their apices free and sporangiferous ; *indusium* orbicular or oblong, scariose, equal with the indusiiform margin, its sides free ; *sori* round, often solitary in each laciniæ.

Fronds *flabellato-multipartite, or tripinnatifid, laciniæ narrow, linear-lanceolate, or obtuse, their apices usually bifid, with the sori seated in the sinus ;* indusium *attached by its base ;* sporangia *vertical,* sporules *oblong-reniform.*

Species. 1. L. parvula, (*Wall.*) 2. L. falcinella, (*Presl.*) 3. L. pulchra, (*Don.*) 4. L. chærophylla, (*Wall.*) 5. L. ligulata, (*Wall.*) 6. L. immersa, *Presl.* (Davallia, *Wall.*) 7. L. hirsuta, *J. Sm.* 8. L. affinis, *J. Sm.*

1 *to* 3, *or* 4 *feet high ;* sporangia *rarely immersed in a*
form cavity ; sori *inframarginal.*

xamp. 1. M. pinnata, (*Cav.*) (Davallia flagellifera, *Wall.*)
. gracilis, (*Blume.*) 3. M. scabra (*Don.*) 4. M. platy-
la, (*Don.*) (Davallia lonchitidea, *Wall.*) 5. M. rhom-
ea, (*Wall.*) 6. M. flaccida, (*R. Br.*) 7. M. adiantoides,
) 8. M. distans, (*Kaulf.*) 9. M. alata, (*Hew.*) 10. M.
ata, *J. Sm.* 11. M. trichosticha, *J. Sm.* 12. M.
, (*Kaulf.*)

lust. Hook. Gen. Fil. t. 58. A.

bs. Habit must again be viewed as the principal mark of
nction between this and the former genus.

106. Deparia, *Hook. et Grev.*

(Dicksoniæ, *sp. Kaulf.* Cibotiæ *sp. Presl.*)

ins pinnate ; *venules* simple, direct, their apices free and
angiferous ; *special indusium* forming with the indusii-
dents a calyciform exserted cyst ; *sporangia* pedicellate,
cal ; *sori* globose, extramarginal.

onds *bipinnatifid,* 2 *to* 3 *feet high, smooth, laciniæ*
l.

ecies. 1. D. prolifera, *Hook. et Grev.* (Dicksonia, *Kaulf.*)

ust. Hook. et Grev. Ic. Fil. t. 154. *Hook. Gen. Fil. t.* 44.

s. The exserted sori constitute the chief distinction
een this genus and the previous one ; and on viewing
ria along with *Microlepia adiantoides,* a gradual transi-
of structure in the connivence of the indusium with
nargin is seen to connect them with genera belonging
e succeeding section *Dicksoniæ.*

107. Davallia, *Sm. J. Sm.*

ins forked ; *venules* direct, their apices free and sporan-
ous ; *sori* vertically oblong, inframarginal ; *indusium*
lly inflated, forming with the concave indusiiform mar-
vertical urceolate or tubular cyst : its apex usually
ricted ; *sporangia* pedicellate, free.

Fronds *varying from simply pinnate to decompound-multifid, smooth or aculeate segments often unisorous; sporangia usually exserted beyond the open margin of the indusium;* sporules *oblong, reniform.*

Examp. 1. D. pentaphylla, *Blume.* 2. D. triloba, *Willd.* 3. D. ornata, *Wall.* 4. D. solida, *Sw.* 5. D. elegans, *Sw.* 6. D. epiphylla, *Sw.* 7. D. pyxidata, *Cav.* 8. D. tenuifolia, *Sw.* 9. D. fumarioides, *Sw.* 10. D. dumosa, *Sw.*

Illust. Hook. et Bauer Gen. Fil. t. 27. Schk. Crypt. t. 127.

Obs. The tubulose indusium readily distinguishes this beautiful genus; but it contains a few species which have narrow cuneate laciniæ or dents, each bearing a short truncate sorus which is sometimes binate, and in that case presenting a relationship with *Lindsæa.*

The genus *Stenolobus* of Presl is founded upon the circumstance of *Schkuhr* having represented the sporangia of *Davallia solida* as being connate, or rather as if produced in a spike-like manner round a slender elongated vertical receptacle, analogous to the following genus *Loxsoma;* but on careful examination of many specimens of *Davallia solida,* as also other allied species, I find the sporangia furnished with long footstalks, which are all free, and rise from a small re-

Species. L. Cunninghamii, *R. Br.* (Davallia dealbata, *A.* *nn. MSS.*)

Illust. Comp. to Bot. Mag. t. 33, 32. *Hook. et Bauer Gen.* l. *t.* 15.

Obs. The habit and apparent view of the sori of this re- rkable fern are similar to several species of *Davallia*, but m which it differs by the sporangia being produced in an bricate manner round a vertical columnar exserted recep- le, which may be viewed as formed by the union of the e of the pedicels, and which structure forms a transition m *Davallia* to *Trichomanes*, and also agreeing with the ter genus, in the ring being oblique.

Sect. III. TRICHOMANEÆ, *J. Sm.*

Sporangia sessile, compactly seated round a columnar ter- nal receptacle, (which is formed by a free prolongation of venule,) included within a bilabiate or urceolate, usually tical cyst, that is formed by the connivence of the in- sium with the margin of the frond.

109. TRICHOMANES, *Linn.*

(Feea, *Bory.*)

Veins simple or forked, direct; *sori* vertically oblong, ter- al; *indusium* urceolate, or calyciform; *sporangia* sessile, ted round a columnar receptacle, which is filiform and ex- ted.

Fronds *from an inch to* 1 *or* 2 *feet high, produced from a ping or cæspitose rhizoma, varying from simple to de- pound multifid, the fertile part, or sometimes the whole d contracted and spiciform, membranous and pellucid, oth, or furnished with simple, forked, or stellated hairs;* rangia *compressed;* ring *more or less oblique or trans- se.*

Examp. 1. T. reniforme, *Forst.* 2. T. membranaceum, *n.* 3. T. sinuosum, *Rich.* 4. T. floribundum, *Humb.* T. crispum, *Linn.* 6. T. alatum, *Sw.* 7. T. spicatum, *Hedw.* 8. T. trichoideum, *Sw.*

Illust. Hook. et Bauer Gen. Fil. t. 31. *Hook. et Grev. Ic. Fil. t.* 9.

Obs. According to the description of authors, this and the following genus *Hymenophyllum* may be considered as forming a distinct natural group of about one hundred species, differing from most other ferns by their very delicate membraneous texture, as also by the apparent peculiar attachment of the sporangia, and direction of the ring. The sporangia being sessile, and closely seated round a columnar receptacle which is formed by a free prolongation of the venule, and either wholly included or much exserted beyond an urceolate or bilbabiate cystiform indusium, is a structure analogous to other genera of *Dicksonieæ ;* but what marks the present genera as peculiar, is, in the ring of the sporangia being more or less transverse or oblique to the point of attachment, which, if admitted as a character of primary importance, would be a reason for separating these genera from having any direct affinity with any tribe of ferns; and which has been so done by several authors of eminence who have separated them from *Polypodiaceæ,* (as characterized with a vertical ring,) and forming of them the order *Hymenophylleæ ;* while again others place them in *Gleicheniaceæ,* with which they have no affinity except in the supposed analogous direction of the ring ; but I am not inclined to consider the difference of structure of such importance as to justify their separation from true *Polypodiaceæ ;* for, according to my view, the peculiarity of the ring is to be accounted for by the sporangia being sessile and compactly seated round the columnar receptacle, in an imbricate manner, the pressure giving each sporangium a flattened form, their point of attachment being more or less excentric on the inner side or base, the upper edge of each inclining a little outwards, over which the ring passes, and therefore its direction appears to be more or less vertical, oblique, or transverse, according to the attachment and direction of the sporangia, and which is a structure quite analogous to the flattened sporangia of *Alsophila, Cyathea,* and other genera in which the sori are compact by being formed of sessile sporangia produced on an elevated receptacle. Therefore, considering that the direction of the ring depends more upon circumstances connected with the attachment of the sporangia than upon real difference of structure, I make no hesitation in retaining them in *Polypodiaceæ*.

In *Trichomanes spicatum* of R. Hedwig, and *T. elegans* of Rudge, (in part) the fertile fronds are contracted, forming a simple distichous spike of sori; in the first, the cellular structure is so far obliterated or suppressed, that each venule becomes a free soriferous pedicel; this form has been employed by Bory, for characterizing his genus *Feea*; but as transitions to the same structure are observed in many other species of *Trichomanes*, I therefore have not adopted Bory's view. In *T. elegans* the fertile frond is in the form of a long, narrow, linear, membraneous rachis, bearing a row of tubular connate sori on each margin, which do not project beyond the connecting membrane; this Fern Bory has also characterized as a genus, under the name of *Hymenostachys*, and which, setting other characters aside, might also not be considered worthy of notice as a generic character; but there is a very striking peculiarity to be observed in this species, that warrants its being retained as a distinct genus, which is in the venation being anastomosed, the only instance, to my knowledge, of anastomose veins in *Trichomaneæ*.

110. HYMENOSTACHYS, *Bory*.

(Trichomanes *sp. Auct.* Didymoglossum, *Desv.*)

Veins (of sterile fronds) forked; *venules* anastomosing; *sori* vertically oblong, terminal, produced within the margin of a contracted rachiform simple frond; *indusium* urceolate; *sporangia* sessile; *receptacle* much elongated, filiform.

Fronds *from* 6 *inches to a foot in length, linear, the sterile frond pinnatifid, smooth*; *segments linear-lanceolate, dentate*; *the fertile frond simple, stipitate, constituting a linear membranous soriferous rachis.*

Species. H. diversifrons, *Bory.* (Trichomanes elegans, *Rudge,* (*in part.*)

Illust. Rudge Icon. Pl. Guian. t. 35. (bad.) *Hook. Gen. fil. t.* 108.

Obs. This is a very rare Fern, originally found in Guiana, and more recently near Panama, and also in the island of Gorgona on the Western coast of South America, where it was found in abundance by Mr. G. Barclay. It should be remarked that Mr. Rudge has formed his figure from part of this species and part of *Trichomanes spicatum.*

111. HYMENOPHYLLUM, *Sm.*

Veins simple or forked; *venules* direct; *sori* globose or vertically oblong; *indusium* urceolate-bilabiate; *sporangia* sessile, seated round a columnar included receptacle.

Small, and generally moss-like ferns, having the habit of Trichomanes, *but differing in the indusium being bilabiate, and including the whole of the sporangiferous receptacle.*

Examp. 1. H. cruentum, *Cav.* 2. H. Tunbridgense, *Sm.* 3. H. sanguinolentum, *Sw.* 4. H. polyanthos, *Sw.* 5. H. dilatatum, *Sw.* 6. H. sericeum, *Sw.* 7. H. hirsutum, *Sw.* 8. H. plumosum, *Kaulf.*

Illust. Hook. et Bauer, Gen. Fil. t. 32.

Obs. The short included receptacle is the only point that distinguishes this genus from *Trichomanes,* but which is a character not always decisive; for, as in other extensive allied genera, species are found to form transitions from the one genus to the other.

Sect. IV. DICKSONIÆ, *J. Sm.*

Sporangia pedicellate, spreading, produced from a round terminal receptacle, included within a concave, bilabiate, or calyciform, reflexed cyst, which is formed by the connivence of the *special indusium* with the indusiiform crenules of the margin.

112. SACCOLOMA, *Kaulf.*

Veins simple, rarely forked, direct, parallel, their apices free and sporangiferous; *sori* round, latterly confluent, constituting a continuous marginal compound sorus; *special indusium* small, linear; *accessory indusium* universal, formed of the continuous reflexed margin.

Fronds *smooth, 2 to 3 feet high, pinnate;* pinnæ *linear-lanceolate acuminate,* 8 *to* 10 *inches in length, serrate at the apex, the sori sometimes not confluent towards the apex of the pinnæ.*

Species. S. elegans, *Kaulf.*

Illust. Hook. Gen. Fil. t. 58. B. *f.* 1, 2.

Obs. This is an elegant fern, having the habit and aspect of *Pteris grandifolia,* with which it also agrees in the similarity of its continuous exterior or accessory indusium, which in this section of *Dicksonieæ* is usually more conspicuous than the special indusium.

113. Cystodium, *J. Sm.*

(Dicksoniæ *sp. Sm.*)

Veins simple or forked, direct, parallel, their apices free and sporangiferous; *accessory indusium* concave, vaulted, its margins conniving, and including the plane interior *special indusium,* constituting exserted globose *sori.*

Fronds *bipinnate;* pinnæ 1 *foot long;* pinnules *linear-lanceolate, acuminate, truncate at the base, from* 1½ *to* 2 *inches long, dentate, the teeth indusiiform, slightly reflexed.* Special indusium *much smaller than the accessory indusium.*

Species. C. sorbifolium, *J. Sm.* (Dicksonia sorbifolia, *Sm. in Rees' Cyclopædia*).

Illust. Hook. Gen. Fil. t. 96.

Obs. This genus is founded upon a very rare fern, a native of the Moluccas, and well described by Sir J. E. Smith in Ree's Cyclopædia; but appears not to have been taken up in succeeding enumerations of Filices. In general character it comes nearest to *Deparia,* but is of a different habit, and differs also in the peculiar cowl-like form of the fertile teeth or sori; and being placed at equal distances on the margin, the whole has a striking appearance; from *Saccoloma* it is distinguished by the exterior indusium of that genus being continuous. Presl has founded a genus (*Leptopleura*) on the *Dicksonia abrupta* of Willdenow, a fern which I have never seen, and judging from description and figure it appears to come near to *Cystodium*, but not so much as to induce me to view them as belonging to the same genus.

114. SITOLOBIUM, *Desv. J. Sm.*

(Dicksoniæ *sp. Sw.* and *Auct.* Patania, *Presl.*)

Veins pinnate; *venules* simple or forked, direct, their apices free and sporangiferous. *Special and accessory indusia* nearly equal, forming a reflexed, entire or bilabiate calyciform cyst, constituting globose exserted *sori*. *Receptacle* elevated, globose.

Rhizoma *creeping*. Fronds *bi-tripinnate, slender; segments crenate multifid, smooth or pilose-glandulose;* fertile fronds *sometimes somewhat contracted and densely soriferous, with the sori of the opposite margins conniving.*

Examp. 1. S. pilosiusculum, *Desv.* 2. S. strigosum, (*Sw.*) 3. S. glutinosum, (*Wall.*) 4. S. dissectum, (*Sw.*) 5. S. adiantoides, (*Humb.*) 6. S. apiifolium, (*Sw.*) 7. S. cicutarium, (*Sw.*) 8. S. rubiginosum, (*Kaulf.*) 9. S. obtusifolium,

hizoma *creeping, thick and densely criniferous.* Fronds
nnate, smooth, ultimate segments dentate, the fertile por-
slightly contracted, bearing the sori in thyrsiform clusters.
isia *coriaceous.*

ecies. B. Culcita, *Kaulf.*

ust. Hook. Gen. Fil. t. 60. A.

s. The slightly oblong and coriaceous texture of the
sia, with the remarkable criniferous rhizoma, are the
features that mark this beautiful fern.

116. DICKSONIA, *L'Hérit. J. Sm.*

(Balantii *sp. Kaulf.* Culcita, *Presl.*)

ins pinnate; *venules* simple, direct, their apices free and
angiferous. *Accessory indusium* cucullate, larger than
special indusium, forming a reflexed unequal bilabiate
constituting large globose *sori.* *Receptacle* elevated,
ose.

hizoma *arborescent.* Fronds *bi-tripinnate, smooth or*
ous, ultimate segments dentate, teeth soriferous. Indusia
ceous.

camp. 1. D. arborescens, *L'Hérit.* 2. D. antarctica,
ll. 3. D. squarrosa, *Sw.* 4. D. lævis, *Hew. in Herb.*
unn. 5. *D. Organensis, Miers herb.*

ust. Hook. et Bauer Gen. Fil. t. 20.

s. The genus *Dicksonia* was originally founded by L'Hé-
upon two species, natives of St. Helena and Madeira,
ne having an arborescent caudex (or rhizoma) fifteen
irty feet or more in height, and the other with a short
creeping rhizoma. Subsequent discoveries have added
t twenty species to the genus, which with a few excep-
agree in their general habit and vascular structure of
fronds; but the greater number have a creeping rhizo-
and differ from the original type of the genus (*D. ar-*
cens), not only in that respect, but also in the special
accessory indusia being more or less connate, and form-
nearly entire circular cup; whereas in the species which

I retain as true *Dicksoniæ*, the outer or accessory indusium is much larger and concave than the special or interior indusium, and the two parts (or valves as they are sometimes called,) are but slightly connate at their base, therefore they form two distinct unequal valves, which is the only obvious distinction between *Dicksonia*, as here characterized, and those species with the nearly circular cup, and which have a creeping rhizoma as characterized under *Sitolobium*. L'Héritier's other species (*D. Culcita*,) agrees in the structure and texture of the indusia, but differs in not being arborescent. I have therefore retained it as a type of the genus *Balantium* of Kaulfuss, and which may be considered to form the transition between *Sitolobium* and *Dicksonia*, and also in its being the nearest in affinity with the solitary species which constitutes the following singular genus *Thyrsopteris*.

117. THYRSOPTERIS. *Kunze.*

Veins pinnate; *venules* simple, direct, free and sporangiferous on their apices, forming soriferous pedicels. *Indusium* calyciform, entire, coriaceous, constituting globose, bacciform, genus *Cyathea*, with which it also coincides in the sporangia being compressed; but its general character induces me to retain it in *Dicksoniæ*, with which it agrees through *Balantium*. The pedicellate calyciform indusium of *Thyrsopteris*, has much resemblance to that of *Sphæropteris*, but in the latter genus the pedicel is a special organ, whereas, in *Thyrsopteris*, it is merely an apparent pedicel, formed by the veins not being connected by cellular membrane, and therefore analogous to many species of *Trichomaneæ*.

118. CIBOTIUM, *Kaulf. J. Sm.*

(Dicksoniæ *sp. Sm.* Pinonia, *Gaud.*)

Veins forked or pinnate; *venules* direct, their apices free and sporangiferous. *Indusium* of two coriaceous unequal valves, forming a reflexed adnate, bilabiate, cucullate cyst, constituting somewhat globose superficial *sori*.

Rhizoma *globose or arborescent*. Fronds *large, tripinnatifid, smooth, glaucous or pilose, laciniæ equal.* Sori *superficially seated on the interior edge of the margin or sinus.* Receptacle *small.* Sporangia *pedicellate.*

Examp. 1. C. glaucum, *Hook. et Arnott.* 2. C. Chamissoi, *Kaulf.* (Pinonia splendens, *Gaud.*) 3. C. Schiedei, *Schlecht.* 4. C. Barometz, *J. Sm.* (Aspidium Barometz, *Hort. Ang.* Balantium glaucophyllum, *Hort. Berol*).

Illust. Gaud. in Freyc. Voy. t. 21. *Hook. et Bauer Gen. Fil. t.* 25.

Obs. This is a very distinctly marked genus, easily distinguished from all other *Dicksonieæ* by its remarkable horny gaping indusium, the outer valve of which differs in its manner of attachment from the analogous valve or accessory indusium that characterizes the preceding genera, which, (as has been already stated,) is formed of the changed reflexed crenule, but in *Cibotium* it is produced on the outer base of the sporangiferous receptacle, exactly opposite to, and of the same structure as in the inner valve, and in that case quite superficial and independent of the margin of the frond, except its mere attachment. In other respects the species agree with *Dicksoniæ*, and also with *Balantium* in the rhizoma or base of the stipes being densely covered with long articulated soft fulvous hairs, the appearance of which gave rise to the fabulous story of *Barometz* or the *vegetable lamb*.

(*To be continued.*)

Observations on the genus HEMITELIA, *of* Mr. R. BROWN, *By* GEORGE GARDNER, F.L.S., *Professor of Botany and Natural History in the Andersonian University, Glasgow.*

(*With a Plate.*—Tab. XII.)

On my last journey to the summit of the Organ Mountains, in April, 1841, I found in shady wooded ravines, at an elevation of about 6,000 feet, a Tree Fern, from six to eight feet high, agreeing with the characters of *Hemitelia*, as given by Presl in his *Tentamen Pteridographiæ*, and which I imagined might prove to be a new species. Since my return to England, I have had an opportunity of comparing it with a fine set of specimens of *Hemitelia Capensis* in the Herbarium of Sir William Hooker, from Mund, Harvey, Drège and others; and also with individuals in Mr. Brown's Herbarium, collected at the Cape by himself in the year 1801. A careful comparison proves that the Cape and the Brazilian plants are identically the same.

The genus *Hemitelia* was first established by Brown in his *Prodromus Floræ Novæ Hollandiæ*, in the following observations made under the genus *Alsophila*, at page 158:—"*Cyathea multiflora* Sm., *horrida* Sm., *Capensis* Sm., cum aliis ineditis, præsertim ab Indiâ occidentali, distinctum genus efformants a nobis *Hemitelia* dictum, in quo sori *Alsophilæ* similes, latere venæ insident, involucro instructi fornicato, basi semicirculari infra receptaculum inserto, marginibus solutis, demum reflexo et persistente."

Succeeding authors have adopted the genus, retaining in it all the above mentioned species, and others from the

West Indies; with the exception of Presl, who in his *Tentamen* divides the genus, retaining the name *Hemitelia* for the Cape plant alone, and giving that of *Cnemidaria* to the West Indian ones, except *H. multiflora*, which he refers to the genus *Alsophila*. In doing this, Presl has certainly not acted in accordance with the rule which ought to guide botanists when they find it necessary to divide a genus; viz., that the old name should be retained for the mass, and not for a single species, as is the case in this instance. Any one who reads attentively the observations of Mr. Brown, quoted above, must perceive that he intended the name *Hemitelia* to be applied to the West Indian group of which *H. horrida* is the type. Presl, in referring *H. multiflora* to *Alsophila* can hardly have had an opportunity of examining its fructification, or he would never have placed it in a genus which is characterised, by himself, as having "sori nudi." Through the kindness of Mr. Brown, I have been allowed to examine a specimen in the Herbarium of the British Museum, and I find it has as perfect an involucrum, and quite of the same nature as that of the true species of *Hemitelia*, from which it, however, differs in having tripinnate fronds, and simple veins, and, consequently agreeing in this latter respect with some species of *Alsophila*. In *H. Capensis* I also find a true involucrum surrounding the receptacle, narrower than that of *H. multiflora*, longer, acuminated, and often a little lacerated. With the persistent involucrum of *Hemitelia*, this species has also the habit of *Alsophila*, and consequently cannot be separated from *H. multiflora*: wherever the one is placed the other must go also. The only difference between them is that, in *H. Capensis*, the sorus is situated only a little way above the base of the simple veins, while in *H. multiflora* it is placed about the middle of it. As they are very distinct in habit and venation from *Hemitelia*, and from *Alsophila*, as at present constituted, in having a true persistent indusium surrounding the base of the receptacle, I propose to constitute of them a distinct genus. Since Presl's genus *Hemitelia* cannot be retained, that name will revert to the group of ferns, for which it was originally intended, and *Cnemidaria* must consequently be abolished—*Hemitelia*, thus reduced, forming a very natural genus, characterised by its bipinnate fronds, furcate veins, the lower branches of the inferior ones anastomosing and forming an arch between each pinnule, and by the half cup-shaped persistent indusium.

Mr. Brown is still of opinion that *H. Capensis* and *H. multiflora* ought to constitute part of his genus, and, assuredly, no botanist has clearer ideas respecting the limits of Genera. But as it is now admitted by every one that no such thing as a genus exists in nature, and that the groups of species which we designate by that name are only conventional, more than one character must be taken into consideration in constituting them; that is, if we wish them to be natural. If the nature and position of the indusium alone are to be admitted as the rule to form genera, or the venation alone, or the position of the sorus, or habit, we depart from that which every one is at present wishing to arrive at—a natural classification. Keeping this principle in view, I cannot see why *H. horrida*, for example, and *H. Capensis*, should be considered congeners; nor why *H. multiflora* should be placed in *Alsophila*, as that genus is now defined. If, however, more than one circumstance is to be regarded in the formation of genera, these two species will compose a very natural genus, as nearly intermediate as possible between *Hemitelia* and *Alsophila*. Mr. Smith has not yet published his observations on this tribe of ferns, but I learn from him that he has considerably modified the character of *Alsophila*, and divided it into four sections, of which *Hemitelia Capensis* and *multiflora* form one. He has likewise done away with *Cnemidaria* of Presl, and retains *Hemitelia* for *H. horrida*, and its allies.

The genus which I now propose to constitute I have named from ἀμθω, and κόσμος, because one of the species is common both to the old and the new world.

AMPHICOSMIA.

Cyatheæ Spec., *Smith et auct.* Hemitelia, *Br. et auct.*

enæ pinnatæ simplices subtus prominulæ. *Sori* fere ad basin aut medio dorsi venarum, globosi. *Indusium* inferum semi-involucrans concavum, latere superiore deficiente, persistens. *Receptaculum* sessile subglobosum velutinum. Capsulæ pedicellatæ.—Arbores *inermes in Americâ tropicâ et in Capite Bonæ Spei obviæ.* Frondes *tripinnatæ, amplæ.*

A. riparia; frondibus triplicato-pinnatis, pinnis oblongo-lanceolatis apice longe acuminatis serratis, pinnulis lineari-lanceolatis acutis argute serratis confluentibus, soris fere ad basin venularum, rachibus glabriusculis secundariis venisque paleaceis, paleis ovatis bullatis lacerato-acuminatis. (Tab. xii.)

lypodium Capense, *Linn. Suppl. p.* 445. *Thunb. Prodr. p.* 172.

pidium Capense, *Sw. Synop. Fil. p.* 61. *Willd. Sp. Plant.* 5 *p.* 267.

athea Capensis, *Smith in Act. Taur.* 5, *p.* 417.

C. Willd. Sp. Plant. 5, *p.* 493.

emitelia Capensis, *Br. Prodr. p.* 158. *Kaulf. Enum. Fil. p.* 253. *Sprengel Syst.* 4. *p.* 126. *Presl, Tent. Pter. p.* 59.

ila Capensis, *J. Sm. MSS.*

ab. Ad Cap. B. S. in locis udis umbrosis. In Brasiliâ ersus summitatem montis dicti *Serra dos Organos*, Provinciæ Rio de Janeiro, et (teste Martio) apud Villa Rica in Provinciæ Minarum Generalium.

The figure which is here given of this species is from my gan Mountain specimens. I have preferred Willdenow's ecific name of *riparia* to that of *Capensis*, since the species now found to be common to Brazil and the Cape.

A. multiflora; frondibus bipinnatis, pinnulis oblongo-lanceolatis acuminatis pinnatifidis laciniis oblongis acutis obtuse serratis, soris ad medio venularum, rachibus alatis.

athea multiflora, *Smith in Act. Taur.* 5. *p.* 416. *Swartz, Synop. Fil. p.* 140. *Willd. Sp. Plant.* 5. *p.* 496.

emitelia multiflora, *R. Br. Prodr. Fl. Nov. Holl. p.* 158:

Spreng. Syst. 4. *p.* 126.

Alsophila multiflora, *Presl, Tent. p.* 61.—*J. Sm. MSS.*

This appears to be a very rare fern; neither occurring in the Herbarium of Sir William Hooker, nor in that of Mr. Smith. The only specimen I have seen of it is that which exists in the Herbarium of the British Museum.

Tab. XII. Fig. 1. Portion of a fertile pinna. F. 2, Segment of do. F. 3, Sorus. F. 4, Sporangium; magnified.

Kew, June 22nd., 1842.

Description of a new species of ERIOCAULON, *Sect.* Pæpalanthus, *from Brazil, by* GEORGE GARDNER, F. L. S., *Professor of Botany and Natural History in the Andersonian University, Glasgow.*

(With a Plate, Tab. XIII.)

ERIOCAULON *(Pæpalanthus)* ARENARIUM.

Dioicum, rhizomate repente, caulibus simplicibus nudis, foliis radicalibus linearibus obtusis trinerviis pilosis ciliatis, pedunculis persistentibus glanduloso-pilosis vaginis fere ad basin fissis acutis pilosiusculis.

HAB. In campis excelsis arenosis in Districtu Adamantum, Provinciæ Minarum Generalium.

Planta mascula: Rhizoma breve, repens, dense foliosum. Caules (rami) foliis radicalibus duplo triplove longiores, simplices, erecti, nudi, pilosi. Folia cæspitosa, rigida, recurva, pilosa, ciliata, linearia, obtusa, trinervia, 5 lin. circiter longa, basi villis longis instructa. Pedunculi terminales, circiter 10, umbellati, dense glanduloso-pilosi, pollicares. Vaginæ fere ad basin fissæ, apice integræ. Capitula hemispherica, albo-lanata; bracteæ involucrantes steriles, oblongæ, obtusæ, margine ad apicem ciliatæ; bracteæ flores stipantes oblongæ, obtusæ, apicem versus pilis albis rigidis dense ciliatæ. Receptaculum glabrum. Flores pedicellati: sepala exteriora oblonga obtusa, apice

esertim dorsum versus pilis simplicibus albo-flavescen-
us ornata et ciliata; interiora in tubum obconicum,
ce trifidum connata. Stamina 3. Antheræ exsertæ,
ongæ. Planta fœminea ignota.

is species belongs to Kunth's first section of his genus
lanthus "*Capitula villosa,*" and is nearly allied to *P.*
nsis, ciliatus, and *brachypus.* I have only access at
nt to three specimens, and in all of these I find the
rs to be staminiferous, from which I am induced to
e that the plant is diœcious. Fig. 4, the artist, con-
d to be the female flower, but it is certainly nothing
than an older state of fig. 3. It is only in the stami-
us flower of its allies that the inner sepals are connate.
emale flowers, therefore, still remain unknown; but most
bly they do not differ much from those of *P. Bahiensis.*
eral other remarkable species of the *Pæpalanthus* group
my Diamond district collections have been delineated and
ppear in an early part of Sir W. Hooker's *Icones Plan-*

. XIII. Fig. 1. Plants, *nat. size.* f. 2. A head of
rs, *magn.* f. 3. A male flower, showing the bract, the
external ciliated sepals, the internal connate do., and
nthers, *magn.* f. 4. An older state of the same, with
ortive style and stigmata seen through the transparent
te sepals, *magn.* f. 5 and 6, Leaves, *magn.*

July 4th., 1842.

AKESIA, *a new Genus of the Order* EMPETREÆ; *by Edward Tuckerman, Esq., of Boston, U.S.A.*

plant, of which I shall here attempt to give some
t, is admirably described by Dr. Klotzsch, in the April
r of Wiegmann's Archives. The name, however, there
gingly given it being anticipated,* and several additional

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tt. in Trans. Amer. Phil. Soc. (n. ser.) 7., Torr. and Gray, Fl. N.
, 355.

facts, important in the history of the genus, having come to my knowledge, I have thought that, perhaps, this additional notice may not prove without interest to botanists. Our plant is particularly curious as a new type in a very small family, and as illustrating the proper generical rank of *Ceratiola* and *Corema.* It was first noticed in print by Dr. Torrey, who described it most carefully in the fourth volume of the Annals of the New York Lyceum. Here, upon incomplete specimens, it was referred to *Empetrum,* and the specific name of *Conradi* given it, in honour of Prof. Samuel Conrad, who gathered it in New Jersey. In 1838 I received specimens from Plymouth in the southern part of Massachusetts, and in 1839 collected it myself abundantly, and with mature but abortive fruit, at the same station. The fructification till then unknown to Dr. Torrey, who, yet from the habit of the shrub had hesitated whether it might not be distinct from *Empetrum,* led Mr. Nuttall (in Herb. nostr.) to pronounce it certainly of a different genus. It was still to *Ceratiola* that both these eminent botanists looked; and I have found on the Newfoundland specimen from Mr. Lambert's Herbarium, a like reference of that plant to the above genus, and even to the old Linnæan species *ericoides,* in the handwriting of the late Prof. Don. In this state of uncertainty the plant remained, till it came to the notice of Dr. Klotzsch, to whom it owes its now well-settled rank as a genus.

The geographical range of this shrub is as yet too imperfectly known to allow us to hazard any limits; still, enough has, perhaps, been ascertained to make it probable that its northern boundary will not far exceed Newfoundland, nor its southern New Jersey. All the recent additions to its history have been made in the north, and the southern states have had too many and careful explorers to leave as much room for hope in that direction. First discovered in New Jersey, where it is found in the sands of Monmouth county, it came next to notice on the south-eastern shores of New England, affording there (abortive) fruit, which had not been observed in the New Jersey plant. In 1840, a still more northern station for the shrub was added by Mr. Nuttall, (Herb. nostr.) who gathered it in the flowering state, on the banks of the Kennebeck River in Maine. A specimen from the Lambertian Herbarium, in my possession, of the female plant in an advanced state, which is labelled on the back of the paper, "Newfoundland, Cormack," in the handwriting of Mr. Lambert, affords the only other habitat, with which we are as yet acquainted.* It seems likely that the range of our plant, though extending so far south as the warm sands of New Jersey, will yet prove on the whole quite northern. I have now only to add the complete diagnosis of Dr. Klotzsch, which affords no room (to me, at least,) for improvement. But the name given by him to the new plant, being previously assigned to a different genus, I venture to propose for it another, in honour of my kind friend William Oakes, Esq., of Ipswich, Masstts. I cannot but think it is with peculiar propriety that our plant will commemorate a name inseparably connected with the New England Flora.

OAKESIA. *Ceratiolæ* species, Herb. Lambert. *Empetri* species, *Torr. in Ann. Lyc. N. Y. Tuckermania*, Klotzsch, (non Nutt.)

Flores dioici. MASC. *Calyx* triphyllus, deciduus, foliolis membranaceis, equitantibus, apice obtusis, basi attenuatis, extus bractea squamæformi munitus. *Corolla* tenuissime membranacea, cyathiformis, apice truncata et minutissime denticulata, longitudinaliter fissa, deinde diphylla. *Stamina* 3, longe exserta; *antheræ* globoso-didymæ, biloculares, loculis per rimam longitudinalem lateraliter dehiscentibus. FŒM. *Calyx* triphyllus, persistens; foliolis membranaceis equitantibus, apice dilatatis, obtusis, extus bractea arida squamæformi cinctus. *Corolla* diphylla, foliolis equitantibus. *Ovarium* urceolatum, basi attenuatum, triloculare, loculis uniovulatis.

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* The small label at the top of the sheet which contains this specimen (apparently not original) reads as follows :—"*Cistus? from Nova Scotia.*" Above has been written by the late Prof. Don, "*Ceratiola ericoides,*" in the same envelope with a fine and *female* specimen of which plant it is, singularly, placed.

Ovula erecta, anatropa. *Discus* hypogynus nullus. *Stylus* tenuis, brevi exsertus, apice trifidus, laciniis subulatis recurvis, intus stigmatosis. *Fructus* parvus, drupaceus, siccus, depresso-globosus, tri-abortu dipyrenus, pyrenis cartilagineis, monospermis. Semen ?—Fruticulus *Boreali-Americanus, depressus, ramosissimus, ramis retroflexis, tenuibus;* foliis *verticillatis ternis quaternisve patentibus, convexo-planis, anguste-linearibus, obtusiusculis, margine apiceque evanescente scabriusculis, dorso longitudinaliter sulcatis;* floribus *dioicis, terminalibus, glomeratis, sessilibus,* capitulis *extus squamis aridis cinctis. Klotzsch, l. c.*

Oakesia *Conradi.*—Ceratiola ericoides, *Herb. Lambert.* Empetrum Conradi, *Torr., l. c.* Tuckermania Conradi, *Kl., l. c.*

HAB. Newfoundland; *Cormack in Herb. Lamb.* New Jersey; *Conrad, Rafinesque.* Plymouth, Masstts; *Oakes; Tuckerman, Russel.* Kennebeck River, Maine; *Nuttall. Fl.* March, April,—Fr.? (coll. in August). "In comparing," says Dr. Klotzsch, "the characters of our plant with those which distinguish the genera *Empetrum*, L., (consisting of *Empetrum nigrum*, L., and *Empetrum rubrum*, Vahl), *Corema*, D. Don, (*Empetrum album*, L.) and *Ceratiola*, L., we find that *Empetrum* differs in having single axillary flowers, supported by three bracts, a three-leaved corolla, a 6-9 celled ovary sunk in a fleshy disk, and a closely sessile, radiately expanded 6-9 cleft stigma;—that *Corema*, agreeing with this plant as respects the habit of inflorescence, is yet distinguished from it by the want of bracts, by a three-leaved corolla, an ovary sunk in a fleshy disk, and a radiately expanded six-cleft stigma, supported by a short style;—and that *Ceratiola*, approaching it in a two-leaved corolla, differs in having axillary flowers supported by four bracts, a two-leaved calyx, two stamens, a two-celled ovary sunk in a fleshy disk, and a radiately expanded six-cleft stigma, supported by a short style."

In its terminal and capituliform inflorescence, *Oakesia* resembles the genus *Corema* of Portugal and the Azores. In its narrow-linear leaves it agrees perfectly both with *Corema* and *Ceratiola*, and like these genera, differs strikingly

*Empetrum.** The latter is alpine, and in both its es presents the same general features and habit. The former, on the contrary, seem to belong exclusively to cts not alpine, to be very much plants of the coast, and end to very warm countries.

iption of Fungi, *collected by* R. B. Hinds, Esq., *ncipally in the Islands of the Pacific. By the* Rev. J. Berkeley, M.A., F.L.S.

(*With two Plates,* Tabs. XIV. XV.)

Fungi enumerated in the present paper are, with two tions, the result of researches made during Captain ey's last voyage in some of the islands of the Pacific. ollection, though small, is remarkably interesting; con- principally of the more minute and delicate species, are seldom attended to. It is curious that they should altogether different from those of the Philippine Is- and Java, though gathered chiefly at no great distance hem. The whole were preserved in spirits; and though me cases the color may have been altered, the form has irse been perfectly preserved, which is seldom the case tily dried specimens.

ther part of the collection, placed in my hands by Mr. , consisted of species gathered on the river Columbia, ka, and in California. These were mostly Agarics; but reater part unfortunately so tender, that it was almost sible to examine them. Nearly all, however, appeared identical with European species. Amongst them I ised *Ag. deliciosus*, *Ag. galericulatus*, *Cantharellus ciba- Boletus subtomentosus and Sphæria Hypoxylon*, all from ver Columbia, and apparently *Ag. floccosus*, from Sitka,

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atural division of the family would seem to be here indicated, but the nportant characters of the genera do not favour it. *Ceratiola*, like um, has axillary flowers; and the perisperm of the fruit of *Corema* is rnose.

and *Ag. miniatus* from California. One species from Sitka was remarkable for its pileus being viscid to such a degree, that the spirit in which it was preserved was quite ropy. I have not ventured to describe this, as it resembles very closely *Agaricus fœtens*. One or two species appeared new, but I found it impossible to do anything satisfactory with them. It is, however, an interesting fact that the species should be so closely allied to, or identical with, European forms.

1. Agaricus (Mycena) *quisquiliaris*, n. s., pileo plano-depresso, striato, crenulato; lamellis postice rotundatis, subadnatis, interstitiis reticulatis: stipite gracili, glaberrimo. (TAB. XIV.)

On twigs, leaves, &c., New Ireland; July Marquesas; Jan. 1840.

β. pileo latiore, stipite curto. (TAB. XIV.)

On sticks, New Guinea; August.

Umber brown, at least in the preserved specimens. Pileus ⅛-¼ of an inch broad, orbicular or somewhat irregular, membranaceous, plano-depressed, smooth, with the margin striate and irregularly crenulate. Gills subfalcate, rounded behind, but more or less attached to the stem, sometimes slightly anastomosing with reticulate interstices. Stem ¼-1 inch long, scarce half a line thick, tough, smooth, but sometimes clinging to the leaves by a few short distinct white threads.

Two or three forms of this species occur in the collection, or at least specimens which I cannot distinguish. The most remarkable of these, which is my *var. β.*, has just the habit of *Ag. centunculis*, with the pileus half an inch broad. The species appears to be allied to *Ag. metatus*.

TAB. XIV. *a. a.* A. quisquiliaris, *nat. size.*; *b. b.* magnified; *c.* section.—A. quisquiliaris *β. nat. size.*

2. Ag. (Mycena) *echinulatus*, n. s.; tenerrimus, pileo convexo, subhemispherico, membranaceo, aculeis curvis echinulato, demum glabrato, umbrino; margine crenulato, striatulo; lamellis liberis, subventricosis, concoloribus; stipite tenui,

cto, gracili, subrufo, glabro; basi disciformi strigoso-tontoso. (Tab. XIV.)

n bark, New Ireland; July. On cocoa leaves, Marsas; Jan. 1840.

ileus ⅛ of an inch broad in the largest specimen, convex, nbranaceous, very delicate, forming at first a convex wart n the bark, without any appearance of a stem, clothed short scattered curved rather obtuse prickles, which at th entirely vanish; margin slightly striate. When dry, sides are much contracted, so as to give the pileus the earance of being strongly umbonate. Gills ascending, tly ventricose, free, brown like the pileus, but paler. n ½ an inch high, scarce ½ a line thick, even, obscurely llose, attached by an orbicular disc which is clothed with rved strigose down.—Allied to *Ag. stylobates.*

ab. XIV. *a.* Ag. echinulatus, *nat. size.*; *b.* two indials, *magnified*; *c.* section, *magnified*; *d.* prickles from the ng plant; *magnified.*

Ag. (Marasmius) *xerophyllon*, n. s.; pileo campanulato, ceo-membranaceo, reticulato-rugoso, umbilicato, flavoo; lamellis paucis, interstitiis reticulatis; stipite æquali presso subtilissime velutino. (Tab. XIV.)

n wood, New Guinea, Aug.

leus ⅝ of an inch broad, coriaceous, membranaceous, of autiful yellow brown, at first convex, at length broadly panulate, with a rugose umbilicus; borders deeply retio-rugose, with a velvety lustre, waved but not lobed. em ¾ of an inch high, ½ a line thick, equal, of the same as the pileus, very obscurely velvety, at length nearly oth. Gills grey, about 10 in number, slightly adnate, shorter ones either free or branching from the longer; interstices strongly reticulated.

is is a very well marked species, but allied to none with h I am acquainted. It has the form of *Ag. fœtidus*, The specific name is intended to express the peculiar arance of the pileus, like that of some dry leaf.

Tab. XIV. *a.* Ag. xerophyllon, *nat. size.*; *b.*, *slightly magnified.*

4. Ag. (Marasmius) *flosculus*, n. s.; pileo convexo, membranaceo, regulariter plicato-striato, interstitiis convexis, centro depresso, ruguloso, umbrino, pulverulento-opaco; lamellis latiusculis, adnexis, fuscis; stipite rufo, sursum pallidiore, gracili, glaberrimo, basi floccosa vel fibrillosa. (Tab. XIV.)

On wood, New Ireland, July.

Pilei 1/8 of an inch or more broad, solitary or subfasciculate, convex, membranaceous, rich umber, with a peculiar pulverulent or velvety appearance, regularly plicato-striate with the interstices convex; depressed in the centre which is finely wrinkled. Gills few, broad, brown, with a paler margin, adnexed, forked at their apices. Stem not 1/2 an inch high, thread-like, quite smooth, and shining, rufous, paler upwards, attached at the base by copious floccose down which sometimes forms little fibrillose strings.

I cannot point out any species to which this is allied.

Tab. XIV. *a. a.* Ag. flosculus, *nat. size*; *b.* ditto, *magnified.*

5. Ag. (Omphalia Mycenariæ) *inconspicuus*, n. s.; pileo membranaceo umbrino sub-plano, centro depresso, lævi; lamellis paucis concoloribus adnato-decurrentibus furcatis; stipite flexuoso rufo pulverulento, basi tomentosa. (Tab. XIV.)

On wood, New Ireland; July.

Pileus 1/4 of an inch broad, plano-depressed, smooth, even, membranaceous, regularly plicate when dry. Gills broad, adnato-decurrent, of the same color as the pileus, few in number forked above, rather thick. Stem slender, 1/4 of an inch high, not half a line thick, somewhat flexuous, rufous, pulverulent, with a little down at the base.

Tab. XIV. *a.* Ag. inconspicuus, *nat. size*; *b.* ditto, *magnified.*

6. Ag. (Omphalia Mycenariæ) *amabilis*, n. s.; albidus, valde delicatus; pileo membranaceo infundibuliformi, margine arcuato pellucido-striato; lamellis paucis angustis, decurren-

tibus, una alterave breviori intermixta, acie acuta interstitiis ix reticulatis; stipite brevi tenui, sursum incrassato, floccis omentosis affixo. (TAB. XIV.)

On sticks, New Ireland, July.

Whitish. Pileus ⅝ of an inch broad, infundibuliform, but ot deeply so, with the margin arched and deflexed; very hin, smooth and even. Gills decurrent, narrow, acute, few nd distant, with one or sometimes two short intermediate nes; interstices nearly even. Stem ⅜ of an inch high, not alf a line thick, thickest above, attached by an indistinct, rbicular, floccose base.

This pretty little species has the habit of a *Cantharellus*, ut the gills are too acute to allow of its being placed in that enus.

TAB. XIV. Ag. amabilis, *nat. size.*

7. Ag. (Pleuropus) *Pacificus*, n. s.; pallide ochraceus; pileo pode resupinato-reflexo orbiculari deinde in lobos pileiformes sso tenui glabro subvirgato margine obscuriore elegantisime, è lamellis tenuibus postice acutis integerrimis, striato.

On sticks covered with bark, Fee-jee Islands; June.

Ochraceous. Pileus 1¼ inch broad, resupinate, at length eflexed, subreniform or orbicular, and divided into pileirm lobes; very thin, smooth, having little virgate dots; e margin when dry of a rich tawny brown, and elegantly arked with darker striæ. Gills acute behind, moderately road, thin, their margin very entire. Stem none. The pecies must be placed next to *Ag. nidulans*.

8. Ag. (Pleuropus) *spiculiferus*, n. s.; flavo-fuscus; pileo embranaceo pellucido-striato glaberrimo orbiculari demum abelliformi postice in stipitem brevem attenuato; margine ubinvoluto; lamellis angustis radiantibus sub lente parum ugente spiculosis præsertim prope stipitem spurium; mycelio occoso in lignum penetrante. (TAB. XIV.)

On rotten wood, New Ireland; July.

Yellow-brown. Pileus in the largest specimen ⅜ of an inch road, at first orbicular, then more or less flabelliform from s being attenuated laterally into a spurious stem, at first minutely hispid, at length quite smooth, except at the very base, pellucido-striate, membranaceous, very delicate. Gills very narrow, radiating, clothed with large acuminate antheridia which are visible under a common pocket lens. Mycelium floccose-fibrillose, penetrating into the rotten wood.

The antheridia are very remarkable in this delicate little species, and are quite as much developed as in *Coprini.* I do not know any species to which it has any obvious affinity.

Tab. XIV. *a.* Ag. spiculiferus, *nat. size*; *b.* ditto, *magnified*; *c.* antheridia, *highly magnified.*

9. Ag. (Hebeloma) *ignobilis*, n. s.; pileo rufo-fusco glabro plano centro depresso margine tenui submembranaceo; lamellis latis ventricosis postice sinuatis dente decurrente sporidiis ferrugineis; stipite subtenui glabro incurvo æquali solido.

On wood, New Ireland, July.

Pileus 1 inch or more broad, plane, depressed in the centre, smooth, with a few obscure radiating furrows, slightly fleshy in the centre, very thin towards the margin. Gills broad, ventricose, emarginate, with an acute decurrent tooth. Sporidia ferruginous. Stem 2 inches high, 1½ line broad, smooth, curved, solid.

10. Ag. (Panæolus) *sepulchralis*, n. s.; pileo carnosulo, campanulato obtuso lævi areolato-rimoso; velo fugacissimo; lamellis latis adnatis cinereo-nigris; stipite æquali glaberrimo rufescente. (Tab. XV.)

Growing in the grass amongst the Chinese tombs, Macassar, Celebes; October.

Pileus 1½ inch broad, 1 inch high, cinereous, decidedly though not thickly fleshy, campanulate, clothed with a very smooth and shining cuticle which is deeply cracked into areolæ. Gills very broad, ventricose, very thin and numerous, adnate, above mottled. Sporidia elliptic, very shortly pedicellate, with occasionally a minute papilla at the apex. Antheridia none, or very obscure. Stem about 3 inches high, 2 lines thick, fistulose, quite smooth, pale reddish brown.

Clearly belonging to Fries's first section of *Panæolus* and allied to *A. separatus* and *Phalenarum.*

Tab. XV. *a.* Ag. sepulchralis, *nat. size*; *b.* section of ditto; *c.* sporidium, *highly magnified.*

11. Ag. (Psathyrella) *modestus*, n. s.; solitarius; pileo late conico membranaceo sericeo griseo; lamellis subdistantibus angustis adnatis nigris albo-marginatis; stipite gracili albido.

On stumps, New Guinea, August.

Pileus ⅜ of an inch broad, ¼ high, conical, but expanded below, striate, very thin and delicate, somewhat silky, greyish. Gills rather narrow, black with a white margin, adnate, clothed with acuminate urn-shaped antheridia, which are divided into spicules at the apex. Sporidia minute, elliptic, brownish. Stem ⅝ of an inch high, ⅔ of a line thick, equal except at the very base, straight, fibrillose, dirty white, with a reddish tinge. There is no trace of a ring. Allied to *Ag. gyroflexus.*

12. Ag. (Coprinus) *musicola*, n. s.; tener; pileo membranaceo campanulato diffracto-squamuloso pallide fusco-purpureo; lamellis angustis adnexis; stipite æquali gracillimo cum pileo concolore, pulverulento.

On the stem of a Musa, Tahiti; Jan.

Pileus ½ an inch or more broad, membranaceous, campanulate, with the border at length turned up and split, pale brown-purple, cracked into minute squamulæ or areolæ. Gills very narrow, linear, black from the sporidia, apparently very slightly attached. Stem 1 inch or more high, not half a line thick, equal, of the same color as the pileus, pulverulent.

13. Cantharellus *partitus*, n. s.; ochraceus, coriaceo-membranaceus; pileo infundibuliformi, demum profunde partito glabro; margine subincurvo; plicis radiantibus venosis distantibus decurrentibus, intermixtis paucis brevioribus acie integra; stipite brevi pulverulento. (Tab. XV.)

On wood, New Ireland, July.

Pileus at first infundibuliform, but soon split, to the very base, even through the stem, into several cuneiform segments, coriaceo-membranaceous, very thin, smooth, slightly furrowed in the direction of the interstices of the veins, about $\frac{3}{8}$ of an inch broad. Folds very narrow, venose, sometimes branched, distant, with a few indistinct intermediate ones; their interstices smooth. Stem slender, minutely velvety or pulverulent, obtuse at the base.

This bears some resemblance to *Cantharellus aplorutis*, Mont.; but it is a smaller species and has not the groove along the edge of the gills, from which character, as anticipating *Schizophyllum*, Fries has established the genus *Trogia*.

Tab. XV. *a.* Cantharellus partitus, *nat. size*; *b.* portion, *magnified*, to shew the upper surface.

14. Schizophyllum *commune*, Fr.

Feejee Islands, June.

15. Polyporus (Mesopus) *Columbiensis*, n. s.; pileo orbiculari tenuissimo subinfundibuliformi glaberrimo margine repando, poris minimis, pro ratione amplis valde brevibus angulatis; stipite centrali gracili subtilissime velutino.

On sticks, Columbia river; August.

Pileus 1 inch or more broad, extremely thin and smooth, subinfundibuliform; pores very minute, but broad in proportion to their size, shallow, angular. Stem nearly $\frac{3}{4}$ of an inch high, $\frac{1}{8}$ of an inch thick, cylindrical, attached by a little orbicular disc, very minutely velvety, darker than the pileus.

The color of the fungus, when in spirits, was a pale washy brown, which in the dry plant changed to deep brown.

16. Pol. *xanthopus*, Fr.

New Ireland; July.

17. Pol. *Leprieurii*, Montagne.

New Ireland.

The specimens, which are certainly the same as what I have received from Montagne, differ in having a regular orbicular pileus with a central stem and the margin, perhaps in consequence, much less crisped. Amongst numerous specimens gathered by Schomburgk in Guiana, I find the pores of some individuals much paler and considerably larger.

18. Pol. *sanguineus*, Fr.

Hong Kong.

19. Pol. (Apus annuus) *vellereus*, n. s.; pileo dimidiato, coriaceo-molli tenui, albo dense sericeo-villoso, zonis obscurioribus angustissimis; margine acutissimo lobato; poris mediis ochraceis subhexagonis, dissepimentis tenuibus laceratis dentiformibusque.

New Ireland, July.

Pileus 2 inches broad, 1 inch long, of a soft coriaceous texture, semiorbicular, attached by a short obtuse stem in the same plane with the pileus, dirty white, clothed with dense shining silky down, somewhat fasciculate, pressed flat and lying in a radiating direction, with a very few narrow impressed darker zones. Hymenium ochraceous. Pores middle-sized, shallow, angular; dissepiments thin, lacerated and elongated into tooth-like processes.

There is but a single specimen of this beautiful plant, which resembles *Hexagona sericea*. I am not certain whether the stem is constant or not; it does not, however, like the spurious stems of many species, arise from the pileus being attached by its vertex, as it is in the same plane with the pileus.

20. Favolus *nummularius*, n. s.; luteus; pileo convexo, subumbonato, carnoso; hymenio subhorizontali; poris rotundis, radiantibus; stipite centrali, æquali, solido, subvelutino. (Tab. XV.)

On decorticated sticks, New Ireland; July.

Dirty yellow. Pileus $\frac{3}{8}$ of an inch broad, convex with an obscure umbo, fleshy, smooth. Hymenium nearly plane; pores rather shallow, nearly round, regularly radiating from the stem. Stem $\frac{3}{4}$ of an inch high, incurved, equal, except at the base, where it is slightly thickened, minutely velvety, rooting into the wood and on the surface by dark lines.

This species, which is certainly new, if described and figured when dry would afford a very different specific character. The pileus, instead of being convex, is then umbilicate, and its whole surface reticulated after the pattern of the pores, as though it were quite membranaceous. The pores radiate regularly from the stem; between the main rows, analogous to the longer gills of an Agaric, are shorter intermediate series.

TAB. XV. *a.* Favolus nummularius, *nat. size.*; *b.* section, *magnified*; *c.* plant, *magnified.*

21. Peziza *Hindsii*, n. s.; amœne rubra cyathiformis extus lævissime parce flavo-fusca pruinosa; margine fimbriato; stipite fistuloso lævi deorsum attenuato.

On dead wood, New Ireland; July.

Of a very rich pink; cup cyathiform or hemispherical, 1¼ inch or more broad, sprinkled sparingly with yellow-brown meal, fringed with short acutely triangular bristles; immediately beyond the margin, externally, there are generally about three grooves all round the cup. Asci linear, obtuse at either end, with a short abrupt stem. Sometimes the base of the ascus is notched; sometimes there are two stems, and very rarely there is a little lateral process above the base. Sporidia elliptic, with two sporidiola. Stem 1 inch high, ¼ broad below, regularly attenuated, obese, fistulose.

This splendid species I have, with great pleasure, dedicated to its discoverer, as a small mark of esteem, and of my deep sense of the liberality with which he has placed his valuable under a lens is minutely downy. Sporidia minute, broadly segmentiform.

More nearly allied to *S. Hypoxylon* than to *S. polymorpha.* The sporidia are smaller even than in the former of these species, and broader in proportion to their length. They are very much smaller than those of *S. polymorpha,* which may be distinguished from some allied forms, by its large sporidia. The size of the sporidia, within certain limits, is not, however, constant as I have shown in the case of *S. pedunculata.* The nearest species, perhaps, to that before us, is *Sphæria scruposa,* Fr.

23. Lycogala *Epidendrum,* Fr.

New Guinea.

I take this opportunity of correcting the following notes to the Memoirs in a former number of this Journal.

P. 139. No. 3 should be *Lenzites applanata,* Fr.—Host., n. 474.

P. 149. It is probable that *Polyporus elongatus* is the same species with *Pol. Flabellum,* Montagne, n. s., from whom 1 have received specimens since the paper was printed, and, who observes that it is very variable.

P. 154, line 1, for "ring-bracing," read "ring-bearing."

P. 156. *Sphæria micraspis* is probably a *Verrucaria,* and perhaps, *Verrucaria nitens,* Fée.

On two species of CHRYSOSPLENIUM, *from extratropical South America. By* W. J. HOOKER.

(With two plates, TAB. XVI. XVII.*)*

In a collection of plants from Valdivia, sent to me by Mr. Bridges some years ago, is a plant, No. 781 of said collection, without fructification; concerning the genus, or indeed the Nat. Order of which I was doubtful, till I received a nearly allied plant from my friend Dr. Lemann, from the late Mr. Lambert's portion of Capt. King's plants from the Straits of Magellan and adjacent countries, whose flowers clearly showed it to be a *Chrysosplenium*; or at least, only differing from that genus in the insertion of the seeds, which is not confined to the base of the cell; and in the styles, which vary from two to three.

The two may be thus distinguished.

1. Chrysosplenium *macranthum*; glabrum, caule basi repente, foliis oppositis cordato-ovatis obtusis grosse crenatis in petiolum attenuatis, cymis terminalibus pedunculatis bracteatis, floribus di-trigynis. (TAB. XVI.)

HAB. Eagle Bay, Port Famine. Capt. King, R.N. (n. 130.)

Glabrum. *Caulis* pedalis inferne repens, ad nodos radicans, superne parce ramosus. *Folia* opposita, patentia, cordato-ovata, obtusa, grosse crenata, tenui-subcartilagineo-marginata, reticulatim venosa, in petiolum vix folii longitudine attenuata. *Pedunculi* terminales, bini, in axilla ramorum duorum superiorum, cum flore intermedio subsessili. *Flores* cymosi. *Cymæ* trifloræ, flore intermedio sessili, unibracteato, floribus lateralibus sessilibus, bibracteatis. *Flores* omnes pro hoc genere magni, ut videtur, flavi. Calycis *tubus* turbinatus, venosus, minute pubescens; *limbus* 4-fidus, lobis patentibus rotundatis. *Corolla* nulla. *Stamina* decem, erecta, glandulis subrotundatis, patentibus, ad basin stylorum alternantia. *Filamenta* subulata, stylis breviora. *Antheræ* rotundatæ, didymæ. *Styli* 2-3, magni, ovati, inflati, stigmatibus parvis recurvatis terminati. *Fructus* capsularis, unilocularis, bi-tricornis; nempe stylis 2 vel 3 incrassatis

Chrysosplenium *Valdivicum*; glabrum, caule repente, ; oppositis petiolatis rotundatis obtusissimis obscure et se crenatis basi subtruncatis, floribus ?—(Tab. XVII.)

s. Moist shady places, "Los Andes," province of aldivia, at an elevation of 7000 feet above the sea. *Mr. ridges*, (n. 781.)

o flowering specimens appear to have been found of this t, and my collection includes two varieties, differing ever in nothing but size. One is little more than an long and the leaves not ¾ of an inch in their test diameter; the other is 1½ foot long, with the leaves 2 es in diameter.

ab XVII. Fig. 1, smaller state of the plant; *f.* 2, por- of the larger variety; *nat. size.*

'ributions towards a FLORA OF SOUTH AFRICA. *By* R. C. F. MEISNER, *Professor of Botany, at the University 'Basel, Switzerland.*

> "Semper aliquid novi ex Africa."
>
> LINNÆUS.

lthough the zealous investigations into the vegetation of h Africa, made by modern botanists, have added erous discoveries to the materials with which Burman, ;ius and Thunberg, had laid the foundation of a Flora hat interesting part of the world, it appears, and the wing pages may prove it, that not only the more remote ern parts of South Africa, but even the immediate rons of the Cape itself, notwithstanding their having , for more than a century, explored by numerous collec- still afford many species hitherto unknown. Dr. linand Krauss, of Stuttgart, after having travelled be- n the years 1838, and 1840, through different parts of colony, from the Cape to beyond Port Natal, returned

6. *Heliophila (Ormiscus) pusilla, Linn. fil.* (DC. prodr. I. p. 232, n. 12).—In arenosis planitiei Capensis, (III. E. b.). Krauss, n. 1250.

7. *Heliophila* (*Orthoselis*) *pilosa* (Lam. DC. l. c. n. 17, forma α et β.)—In arenosis prope Hout Baay, (III. E. b.), Sept. 1838. Krauss, n. 1240.

8. *H.* (*Orthoselis*) *digitata* (Linn. fil. DC. l. c. n. 18).—In arenosis planitiei Capensis, (III. E. b.), Nov. 1838. Krauss, n. 1242.—Vix non præcedentis mera varietas.

9. *H.* (*Orthoselis*) *subulata* (Burch. DC. l. c. n. 31.).—Port Natal, (V. c.) Hb. Krauss, propr.—Huc pertinere nobis videtur Dregei n. 7561, cujus fructum non vidimus.

10. *H.* (*Orthoselis*) *suavissima* (Burch. DC. l. c. n. 30).—*H. fascicularis*, Hb. Drège, haud DC.—In solo argillaceo ad radices montium Winterhoek, distr. Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 1239.—A *H. fasciculari*, Hb. Banks, DC., differt pedicellis fructiferis patentibus v. deflexis semipollicaribus et foliis anguste linearibus (nec filiformibus), 1-½—2-pollicaribus. Petala roseo-violacea.

11. *H.* (*Orthoselis*) *platysiliqua* (R. Br. DC. l. c. n. 32).—Cum præcedente legit Krauss, n. 1253.

12. *H.* (*Orthoselis*) *linearifolia* (Burch. DC. l. c. n. 33.)—

solo argillaceo terræ Zitzikamma, distr. George (IV. C. b.) Mart. 1839. Krauss, n. 1244.

14. *H.* (*Orthoselis*) *scoparia* (Burch. DC. l. c. n. 36.)—In raminosis ad latera montis Duyvelsberg (III. A. e.) Jul. 838. Krauss, n. 1241. (Pl. Ecklon, Un. itin. n. 171).

15. *Heliophila (Lanceolaria) sarcophylla, nob.*;—suffrutiosa glabra, ramis subsimplicibus, virgatis, adscendentibus; oliis lanceolato-linearibus, acutis, carnosis; racemis termialibus, remotifloris, sepalis pedicellum æquantibus, memranaceo-marginatis; siliquis pedicello erecto duplo-triplo ongioribus, lanceolatis, stylo brevi-rostratis, tenerrime enosis; seminibus orbiculatis, angustissime membranaceoarginatis.

Inter saxa in Langekloof, distr. George (IV. B. c.) Mart. 1839. Krauss n. 1245.

From *H. macrosperma*, (Burch.) which we have not seen, his species evidently differs in the conspicuous, though exremely narrow, transparent margin of its seeds, which are ne line in diameter, perfectly circular or slightly ovate, very ttle convex on both sides, of a reddish-brown in the middle, nd dark brown towards the white membranaceous margin. n habit the plant resembles very much *H. scoparia* and *irgata*, and also *Brachycarpæa varians*. The branches are ound and smooth, and somewhat glaucous towards the ummit; the leaves rather numerous and approximated, erfectly sessile, scarcely attenuated towards their base, not xceeding 8 lines in length, and 2 lines in breadth, terminated y a small brown or reddish callous point, except the lowest f each branch, which are usually quite blunt or even rounded t the apex; to judge from their thickness and their veinless rinkled surface, they seem to have been rather fleshy, and robably convex beneath. Racemes five inches long, quite nbranched, and leafless, the distance between each flower lways, at least, equal to their length (sometimes even more han an inch), pedicels solitary, semi-erect, 2-3 lines long, liform, scarcely thickened at the top, unchanged after owering, whether in length or in direction. Petals double the length of the obtuse sepals, obovate (or obcordate?) much attenuated towards the base, white, slightly tinged with rose towards the summit. Siliques sessile, lanceolate, glabrous, 7-8 lines long, nearly 2 lines broad, with a cylindrical, bluntish, deciduous beak of one line in length; valves very flat, scarcely torose, sometimes a little undulated at the margin, very slightly reticulated, and traversed by a middle nerve hardly more conspicuous than the very thin veins. Seeds 3-4 in each cell, disposed in a single series; cotyledons exactly as described in *H. macrosperma*, by De Candolle.

16. *Heliophila* (*Carpopodium*) *callosa* (DC. l. c. n. 44); glaberrima, caule fruticoso, costato-angulato, ramis virgatis; foliis coriaceis, anguste lanceolatis, acutis, planis, nervosis; racemis terminalibus, sepalis acutis pedicello subtriplo brevioribus, petalis subspathulato-oblongis; siliquis erectis, breviter stipitatis, linearibus, stylo brevi apiculatis, planis, utrinque 1-nerviis.

Ad latera montis Tafelberg, alt. 2000' (III. A. e.) Sept. 1838. Krauss, n. 1246.

A very remarkable plant, which, notwithstanding the insufficient description, we take to be *Cheiranthus callosus*, talk, and at the summit into a blunt style of the same ngth (1½-2 lines) ; margins straight or scarcely undulated ; lves flat and even, with a distinct, though thin and faintly rominent middle nerve ; reticulation quite obsolete. Seeds 8 in each cell, in a single series, quite flat, nearly orbicular, lin. long, and almost as broad, brown, with a pale whitish embranaceous margin of nearly half a line in breadth ; terinations of the cotyledons straight, not dilated and curved in the section *Lanceolaria*.

17. *Heliophila* (*Carpopodium*) *brachycarpa, nob.*—Fruticosa, mosissima, glabra ; foliis herbaceis, subpetiolatis, linearibus, bacutis, planis ; racemis terminalibus corymbiformibus ; palis obtusis, pedicello brevioribus ; petalis spathulato-longis, apice rotundatis ; germine breviter stipitato, lanolato-oblongo, stylo brevi rostrato.

In solo argillaceo ad radices montium Winterhoek Uitenge (IV. C. c.) Apr. 1839. Krauss, n. 1254.

Branches round, smooth, whitish. Leaves crowded, reading, about one inch long, and one line broad, simply ute (not mucronate), or sometimes quite obtuse, attenuated to a short and thin petiole, the middle nerve more or less sible, especially underneath. Corymbs few-flowered, afterrds elongated into short racemes ; pedicels filiform, semitent ; sepals oblong, yellow or greenish, with a white memanaceous margin, 2 lines long ; petals pale yellow, 4 lines ng, 2 lines broad at the upper part, attenuated into a ort unguis ; stamens and ovary as long as the calyx ; ovary th two ovules in each cell, and supported by a very short, t quite distinct stalk, for which reason the species would pear to belong to De Candolle's last section. We have t seen the fruit, but the plant agrees with none of the ecies hitherto described, nor with any in Drège's collection.

VIOLARIEÆ.

Viola decumbens (Linn. fil. DC. prodr. 1. p. 229, n. 52). l latera mont. Bavianskloof, (IV. B. b.) alt. 1000—2000'. ec. 1838. Krauss n. 1225.

DROSERACEÆ.

1. *Drosera trinervia* (Spreng. DC. l. c. p. 318, n. 10). Prope Uitershoek, distr. Cap. (III. A. e.) Sept. 1838. Hb. Krauss, propr.

2. *D. Capensis*, *L.* (DC. l. c. n. 21.) Per totum distr. Zwellendam (IV. B. b.) Dec. 1838. Krauss n. 1224.

3. *D. cistiflora L.* *β. violacea* (DC. l. c. n. 25).—In argillaceis prope Paarl (III. D. a.) Jul. 1838. Krauss n. 1223.

POLYGALEÆ.

1. *Polygala oppositifolia*, *L.* (DC. prodr. 1. p. 321, n. 1).—In solo arenoso ad sylvarum margines prope Port Natal. (V. c.) Jul. 1839. Krauss, n. 278.—From this we cannot distinguish *P. rhombifolia* Eckl. et Zeyh. enum. p. 18.

2. *P. cluytioides* (Burch. DC. l. c. n. 6).—Ad sylvarum margines in Zitzikamma (IV. C. b.) Mart. 1839. Krauss n. 1227.

3. *P. myrtifolia*, *L.* (DC. l. c. n. 7).—In hiatibus montis Tafelberg, alt. 1000' (III. A. e.) Jul. Sept. 1838. Krauss n. 909.

7. *P. microlopha* (Burch. DC. l. c. n. 15.)—Inter frutices
pe Uitenhage (IV. C. c.) Apr. 1839. Krauss n. 1229.
1231.—As to habit and form of the leaves this species is
rmediate between *P. Burmanni* (DC.) and *P. virgata*,
unb. (Fl. Cap. p. 555.) From the latter, which it
embles in the want of pubescence, and in the blunt, sub-
iaceous leaves, it is readily distinguished by its shorter
emes and pedicels, its flowers of scarcely half the size, its
rt crista carinalis, and its shorter and not so manifestly
eate leaves. From *P. Burmanni*, with which it agrees in
length of the racemes and pedicels, and whose flowers are
a trifle larger, it differs especially in the absence of
escence, in the stronger consistence and generally blunt
mination of the leaves, and in the shortness of its crista
inalis. Our plant agrees pretty well with De Candolle's
too insufficient diagnose. The leaves, however, are more
quently lanceolate than "linear," varying from 6 to 10
s in length, and from 1 to 1-½ line in breadth; they are
nuated at both ends (not broadest at the top, like *P. vir-
a*), and usually quite obtuse, with a more or less visible,
always minute, mucro; sometimes, however, they are
rely acute, as they commonly are in *P. Burmanni*. Racemes
0-flowered (their summit remaining undeveloped), pedicels
ut as long as the outer sepals; alæ four lines long and
ost as broad, quite obtuse, white, faintly tinged with
e, and marked with their green, pinnate and confluent
ns, the pale purple crest of the carina scarcely 1½ l. long.

. *P. bracteolata* (Linn. DC. l. c. n. 10. excl. var. δ et γ)
latera mont. Duyvelsberg et Tafelberg, (III. A. e.) Sept.
8. Krauss n. 907 et 1232.

. *P. umbellata* (Thunb. Fl. Cap. p. 555, E. Meyer, in
Drège. Burm. Afr. t. 73. f. 5; optima.) *P. bracteolata δ et
san γ?* (DC. l. c.)—In planitie Capensi (III. E. b.)
v. 1838. Krauss n. 938 (ex parte).—We entirely agree
h our friend E. Meyer, in considering this species as suf-
ently distinct from the foregoing; an opinion towards
ich De Candolle himself had inclined.

10. *P. speciosa, Sims,* DC. l. c. n. 17. Ad rivulos in Zitzikamma (IV. C. b.) Mart. 1839. Krauss n. 1230.

11. *P. macra, DC.* l. c. n. 22?—In solo lapidoso-arenoso ad latera mont. Winterhoek, distr. Uitenhage (IV. C. c.) May 1839. Krauss n. 1228.—The shortness of De Candolle's diagnostic phrase, and the want of an ampler description and figure, will place *P. macra* among the "species vix notæ," to be recognised only by autopsy of original specimens. In the shortness of the leaves (3-6 lines) our plant seems to agree with *P. macra;* but, in its elongated raceme, and pale pink flowers, it approaches more to *P. genistoides,* Poir. from which, perhaps, that species is not sufficiently distinct.

12. *P. genistoides, Poir.* dict. 3. p. 492. *β. ephedroides, Burch.* DC. l. c. n. 23?—In arenosis prope Kafferkuylsrivier, distr. Zwellendam (IV. C. a.) Jan. 1839. Krauss, n. 904. —In our specimens, the flowers are pale green, except the carina, and especially its fringed crest, which is purple. The alæ are a little smaller, narrower, and more distinctly veined than in our *P. macra,* which has them 4-4½ lines long, and nearly as broad, and traversed only by one greenish vein.

From *P. Garcini*, which this species closely approaches in habit, it is easily distinguished: 1st, by its less filiform eaves, which, instead of being insensibly attenuated into an cute point, are always more or less obtuse, and generally erminate in a minute and sometimes recurved mucro; 2dly, y its much longer, very slender, and less densely flowered acemes; and lastly, by its broad obovate, much shorter and nore rounded alæ, which in *P. Garcini* are nearly double the ength, and shortly pointed, so as to give the alabastra an cute form, whereas in *P. uncinata* they are rotundato-btusissima.—Branches erect or ascendent, almost filiform, ound, minutely striated; leaves rather scarce, 10-18 lines ong, about 1 line broad, with somewhat recurved margins. Racemes 5-8 inches long, naked, the bracts falling off, even efore expansion of the flowers; pedicels and outer sepals ne line in length, alæ 2½ lines long, 2 lines broad, almost white perhaps faintly rose in the fresh state) with three or rarely ive green veins which anastomose towards the apex; carina vith a purple beak, surmounting the very short and pale rista; lateral petals spatulate, obtuse; capsule glabrous, bsoletely reticulate; seed oblong, quite covered with long, vhite, silky hairs, and crowned with an obtuse biauriculated aruncula.

15. *P. hispida, Burch.* DC. l. c. n. 29. E. Meyer, in pl. Drège. n planitie Capensi (III. E. b.) Nov. 1838. Krauss n. 938 ex parte.) — A poor specimen, too imperfect for descripion, but perfectly agreeing with Drège's plant, was mixed y Krauss with his specimens of *P. Burmanni*, with which t has little resemblance.

16. *P. lanata, E. Meyer*, in pl. Drège.—Herbacea? caulibus liffusis, adscendentibus, parce ramosis, filiformibus, foliisque trinque patenti-pilosis; foliis subsessilibus, sparsis, acutis, nfimis late ovalibus, superioribus ovato-oblongis, summis ineari-lanceolatis; racemis terminalibus brevibus, pedicellis epala subæquantibus, alis obovato-oblongis obtusis, carina ninute cristata, capsula late ovali emarginata.

In solo argillaceo-arenoso prope flum. Knysna, distr. George (IV. c. b.) Jan. 1839. Krauss n. 905.

A small plant, approaching in habit rather to *P. vulgaris*, than to any of the above Cape species. Up to the inflorescence, the branches are beset with semipatent leaves of 4-7 lines in length (i. e. a little longer than the internodia), 1-3 lines in breadth, the lowest being the broadest but shortest, the uppermost the narrowest, but equal in length to those of the middle part of the branches; their hairs, especially on the margin, are about one line long, very thin and soft, and rather copious. Racemes quite simple, ½-1½ inches long, bracts deciduous, flowers greenish, scarcely larger than those of *P. amara;* pedicels very short, equalling the outer sepals; alæ about twice as long (1½-2 lines, by 1 line of breadth) with three green veins; upper petals obtuse, as long as the carina, which is shorter than the alæ, and terminates in a short-fringed crista, composed of a few pale purplish filaments; capsule almost as long as the alæ, nearly as broad as long, slightly emarginate, without a membranaceous border, glabrous and obsoletely reticulated; seeds brown, thinly covered with short hairs, and crowned with a small, obtuse, and naked caruncula.

planitie Capensi (III. E. b.) Sept. 1838. Krauss (Un. . n. 538.)

9. *M. ericæfolia, DC.* l. c. n. 10, E. Mey. in pl. Drège.—ırenosis circa Uitershoek, distr. Cap. (III. A. e.) Sept. 8. Krauss n. 817.—Thunberg's description of his *Poly- mixta* (Fl. Cap. p. 557), referred here by De Candolle, es well with our plant. It very much resembles *M. iteria*, and is, perhaps, not sufficiently distinct, unless in fruit, which we have not seen. Its deep, purple flowers crowded at the extremity of the branches, so as to give n the appearance of dense spikes.

0. *M. thymifolia, DC.* l. c. n. 26.—*Heisteria mitior,* Berg. Cap. p. 187. (descr. cum plantâ nostrâ bene conveniens.) nter frutices prope Paarl (III. D, a.) Jul. 1838. uss n. 819.

1. *M. squarrosa, DC.* l. c. n. 7.—In arenosis planitiei ensis (III. E. b.) Nov. 1838. Krauss n. 811. (Drège 738 ?)—The leaves are not "villose," as indicated by nberg (Fl. Cap. p. 558, n. 16.) but even scarcely ciliated n quite young.

2. *M. saturejoides, Burch.* DC. l. c. n. 12.—*P. ericifolia,* Mey. in. pl. Drège. (non DC.)—In arenosis circa Uiter- k, distr. Cap. (III. A, e.) Sept. 1838. Krauss n. 817.

3. *M. alopecuroides, DC.* l. c. n. 5.—Prope Paarl (III. ı.) Jul. 1838. Krauss n. 812. (Drège n. 7244).

1. *M. ciliaris, DC.* l. c. n. 20. (excl. var. ?)—Inter ces prope Bergrivier (III. E, b.) Jul. 1838. Krauss 15. (Sieber Fl. mixta n. 10. forma minus hispida).

. *M. Candolleana, nob.*—Fruticulosa, ramis subsimpli-

to the insufficiency of our literary means for the purpose, the greater f the species hitherto established having been published merely with diagnostic phrases, of which one half of the words are superfluous, as ting characters common to almost the whole genus (such as "floribus ibus sessilibus," and "foliis fasciculatis") and the other half of little mentioning characters of subordinate importance. We dare, therefore, for due indulgence, if some of the following species should, one day, nparison with authentic specimens, prove to be wrongly determined.

cibus, divaricatis, strictis, puberulis; foliis conferte fasciculatis, patentissimis, subtereti-linearibus, recurvo-arcuatis, mucronatis, ciliatis, subtus hispidulis, demum glabratis; floralibus subadpresso-erectis, ovato-lanceolatis, planiusculis, costatis, flore sessili longioribus; sepalis brevibus, obtusiusculis, muticis.

In solo argillaceo ad latera montis Duyvelskop; distr. George (4. A.) Feb. 1839. Krauss n. 805.

M. ciliaris, β. laxiuscula. DC. l. c. n. 20?

Branches round, rather stiff, brown, with a minute greyish pubescence, denser towards their extremity, without any callosities or tuberculous protuberances at the origin of the leaves with which they are covered all over. Leaves, generally five in each fascicle, all nearly of the same length (about 3 lines), almost filiform, spreading horizontally, and more or less curved, so as to point downwards with their short (often obsolete) mucro; they are convex on both sides, minutely ciliated on the margin, somewhat puberulous underneath, almost smooth on the upper side; the fascicles are not more than 2-3 lines distant from each other, but, owing to their almost horizontal direction, the stem remains visible to within 2-3 inches of the summit of the branches, where it becomes completely hidden by the almost erect position of

ices, to which the leaves were attached; by its some-
larger (not filiform) and less curved leaves, which are
ally not more than three in a fascicle, and sometimes
solitary, and by its shorter spikes (commonly one inch
, the bracts of which are but slightly broader than the
ion leaves (scarcely exceeding half a line in breadth),
consequently distinctly narrower than in *M. Candol-*
.

M. Kraussiana, nob.; fruticosa, ramis virgatis, pube-
ibus, dense foliosis, inferne tuberculato-cicatrisais:
fasciculatis, semierectis, glabris, linearibus, obtusis,
onulatis, basi attenuatis, dorso convexis, supra subcon-
; floribus sparsis, folia vix æquantibus; sepalis brevibus,
, muticis; capsula late ovata, stylis 4 æquilonga.
solo calcareo planitiei Zœtendalsvaley, prov. Caledon
C, a.) Dec. 1838. Krauss n. 807.
pretty shrub, easily distinguished from all other species
foliage, which so densely covers the branches, as to
al them almost completely. Leaves from 3 to 7
lly 5) in each fascicle, coriaceous or somewhat fleshy,
herefore slightly wrinkled when dry, of a light yellowish
, all nearly of the same length (about 3 lines), almost
ulate or cuneate, broadest (about half a line) near the
which is rounded and terminated by a minute sharp
, more visible and longer on the youngest leaves, ge-
ly obsolete or wanting on the lower ones; the upper
ce is flat or slightly concave, the inferior obtusely convex
carinate) with no distinct nerves, and the margins are
, without cilia or asperities. Flowers scattered along
xtremity of the branchlets, half concealed by the leaves,
derably smaller than those of *M. Heisteria;* sepals very
(about one-third of the length of the whole flower),
, the upper one a little longer than the rest; petals
with the top of the carina dark purple, the upper ones
w, obtuse, half as long as the inferior: capsule ovate,
t as broad as long, didymous, smooth, crowned with 4
tyles of its own length, and diverging upwards.

27. *M. dumosa, DC.* l. c, n. 32. E. Meyer, in pl. Drège.—Ad latera mont. Tygerberg (III. D, a.) M. Jul. 1838. Krauss n. 818.—Rami stricti, minutissime puberuli, demum glabri. Foliorum fasciculi 3-(rarius 5-) phylli, demum remotiusculi, patentes; foliis rigidulis, linearibus, basi attenuatis, planis, apice obtuso v. acuto recurvo minute mucronulatis, dorso 1-nerviis, 2-3 lin. longis, ½ lin. latis, scabriusculis; axillis (superioribus) 1-2-floris. Flores magnitudine formâ et colore fere omnino præcedentis. Capsula desideratur.

28. *M. brevifolia, DC.* l. c. n. 3.—In arenosis planitiei Capensis (III. E, b.) Jul. 1833. Krauss n. 813.—*M. serpylloides*, Eckl. et Zeyh. enum. p. 25, fide specim. Un. itin. n. 540.

29. *M. diffusa, Burch.* DC. l. c. n. 15. E. Mey. in pl. Drège.—Inter frutices prope Constantiam (III. D, b.) Sept. 1838. Krauss n. 814. In monte Tafelberg, alt. III., Ecklon. Un. itin. n. 52.

30. *M. tenuifolia, DC.* l. c. n. 13 ?—In summitate montium Tafelberg prope Port Natal, alt. 2,000-3,000 (V, c.) Sept. 1839, Krauss n. 253.—We refer our plant to this species, because it is distinguished from all others we have seen by much thinner leaves; besides, it agrees tolerably well with De Candolle's diagnose, and Poiret's short description (dict. 5, p. 497). From *M. conferta* DC., (which it resembles in its leaves being scabrous on the margin and midrib, with minute setulæ, scarcely visible to the naked eye), it differs in the minute (not hirsute) pubescence of the branches, and by the narrow lanceolate or linear leaves, 3-4 lines in length, and ⅓-⅔ lin. in breadth. We have not seen the capsule.

31. *M. heterophylla, E. Mey.* in pl. E. Drège.—Ramis simplicibus, gracilibus, superne puberulis; foliis subtrigono-linearibus, acuminato-mucronatis, semipatentibus, glabris, summis ciliatis, aliis solitariis, aliis fasciculatis (foliis axillaribus parvulis); sepalis ovato-oblongis, acutis, submuticis, corollâ vix dimidio brevioribus.

In arenosis planitiei Capensis prope Constantiam (III. D, b.) Sept. 1838. Krauss n. 816. (Un. itin. n. 544).

M. linophylla, Eckl. et Zeyh. enum. p. 27. (ex pl. Un. itin. huc citata.) an Burch.?

M. sprengelioides, DC. which is said to be quite glabrous, and to have subpedicellate flowers, is perhaps not essentially distinct from our plant. Leaves generally slightly recurved, 4-5 lines long, and $\frac{1}{3}$ line broad, the distance between the fascicles varying between 2 and 4 lines; the axillary leaves, which usually occur only towards the summit, are but two in number, and scarcely exceed one line in length. Flowers often crowded into rather thick spikes, and as large as those of *M. Heisteria*; calyx membranaceous, 2-lines long, almost white; sepals somewhat unequal, merely acuminated into a stiff point (not abruptly mucronate.) Corolla of a pale incarnate colour, with a dark purple spot at the top of the carina. Our specimens are not in fruit.

32. *M. linophylla, Burch.* DC. l. c. n. 17?—In solo argillaceo inter flum. Gauritz et Brakrivier, distr. George (IV. C, b.) Jan. 1839. Krauss n. 806.—Præcedenti affinis, sed distincta foliis paulo brevioribus, rectiusculis, basi margineque puberulis, vix unquam subfasciculatis, floribus paulo minoribus, sepalis ovatis apice purpureis.

33. *M. virgata, Burch.* DC. l. c. n. 16.—In arenosis planitiei Capensis (III. E, b.) Nov. 1838. Krauss n. 810 (Un. itin. n. 83.)—Except that in our specimens the younger leaves are distinctly ciliated, and the sepals not remarkably acuminated, but merely oblong-lanceolate, they agree well with De Candolle's diagnose. The 4 styles are a little longer than the capsule.

34. *M. cliffortiæfolia, Eckl. et Zeyh.* enum. p. 25, n. 188.—In solo argillaceo inter flum. Gauritz et Brakrivier (IV. C, b.) Jan. 1839. Krauss n. 935. (*M. epacridea*, nob. olim in Herb. Krauss.

A fine and most distinct species, more resembling in foliage some species of *Epacris* (for instance *E. grandiflora*) than any of the present genus. Although we have not seen Ecklon's plant (which was also found near the Gauritz Rivier) we have little doubt that ours belong to the same species; if not, our former name of *M. epacridea* may be retained for it is quite as appropriate. Branches thick, dark brown or black, bearing numerous small tubercles at the cicatrices of the fallen leaves, dividing at the extremity into several approximate, almost umbelliform, short, pubescent branchlets, thickly covered with sessile, coriaceous leaves of a pale yellowish-green colour, and of an ovate acuminate form, measuring 5-6 lines in length, and below the middle 2½-3 lines in breadth. They are perfectly glabrous, without ciliæ and more or less wrinkled; their upper face is deeply concave, the dorsal one marked with a rather strong nerve, which runs out into a strong, sharp, and straight brownish mucro; in the young state they are semi-erect, and almost imbricate, being scarcely distant one line from each other, but afterwards they become quite patent, and their axils frequently bear a fascicle of two or three smaller complicated leaves. The axillary, solitary and perfectly sessile flowers are scarcely 2½ lines long, the sepals minute, (half a line), obtuse, without a mucro and uncoloured, the corolla about three times longer, pink, the upper petals nearly as long as the carina; capsule obliquely ovate (the bottom of one cell reaching a little farther down than the other) as long as the four erect styles, which are compressed and dilated at the base, especially that on the upper side, which runs down on the margin of the fruit, in the form of a minute evanescent wing. The immature ovary shows but two styles, each of which afterwards splits in two, as is probably the case in many, if not all, the other species.

(*To be continued.*)

Remarks on the physical aspect, climate, and vegetation of Hong-Kong, China, by RICHARD BRINSLEY HINDS, *Surgeon, R.N.; with an enumeration of plants there collected; determined and described by* GEORGE BENTHAM, ESQ.

The island of Hong Kong is one of several at the enrance of the Canton river, all of similar aspect, character, nd population; the former wild, dreary, bleak, and appaently extremely barren; the last, by turns, fishermen and irates. Hong Kong is equally rugged with the others, and conists of several mountain masses thrown together, connected ccasionally by ridges, and, between these, lie numerous allies, more or less sheltered from the violence of the winds. 'he general appearance of all its parts is similar; but the asterly portions are bolder, the vegetation more sparing and tunted, the outlines more rounded, and the large bare masses f rocks unscreened by foliage. The western side is vidently preferable, as the vallies descend with less rapidity, nd a certain quantity of soil is collected; vegetation thrives etter, and is more varied; some stunted pines try to assume he importance of trees; and the shores bear no marks of the iolence of the ocean. Water abounds every where, and ach valley of the least pretensions, sends its stream to the ultivated grounds near the shore, where a portion is retained r irrigation, and the remainder is permitted to find its way o the sea. These streams continue to exist through all the easons of the year, though they diminish greatly during the ry weather. After the rains many become small torrents, umbling in haste over their rocky beds, and sometimes orming little cascades.

Granite is the prevailing rock, and it abounds every where, aving in many places been extensively quarried, and was argely used in the construction of the forts on the peninsula f Lintao. Though the usual structure of the granite be hard nd resisting, yet where it has been much exposed to the ction of moisture, its colour has changed, it is easily disinegrated by the fingers, and small masses of quartz separated. The sands of the beach have this origin, and vary in fineness acording to the transporting influence of the water. Towards igh water mark it is often as coarse as gravel, and thence graually increases in fineness, towards the line of low water, till t becomes a fine sand. Basaltic trap is not uncommon, and on he rocks skirting the bay of Tcha-Tchu, I observed a vertical dyke of basalt, of about ten inches breadth, traversing the granite. In a small bay on the northern shore I saw a quantity of pumice strewed near the beach, beyond the usual influence of the tides.

With so much irregularity of surface, there will necessarily be much diversity in the soil; the mountain sides and elevated parts will be chiefly bare and rocky, whilst the beds of the vallies are likely to collect all the usual materials which contribute to its formation. In many places it is deep, and on examination, proves of a red colour, friable, containing small particles of quartz, and, it would appear, sufficiently productive; in some cases it approaches clay, and is made into bricks, which by burning take on them a blue colour. This is their general aspect throughout the vast surface of the empire, and the character of the soil, clay, and bricks of Hong Kong is a fac-simile of those of China generally.

To the vallies then is nearly restricted all the cultivation of the island. The selection is usually made where these terminate on the coast, the sides of the vallies here expanding, and the supply of water for irrigation being more abundant and regular. Still, the surface requires some artificial levelling, and the peasantry often distribute it into a series of broad terraces, from one to two feet above each other, and which, from a distance, resemble gigantic staircases. Great neatness is conspicuous in their formation; sometimes the sides are faced with stonework, though an earthy barrier usually suffices, and the outline is formed with much regularity. A healthy supply of water from the neighbouring stream is admitted by suitable channels, according to the necessities of the growing crop, and sometimes women pour water over the plants, individually, from large buckets of bamboo with long spouts. This they often practice in the middle of the day, when the sun is at its highest. The staple production of these terraces is the sweet potato, but yams and cocoes are also cultivated; turneps are evidently favourites, and it is rare to see an establishment without a corner devoted to a bed of onions. A few other vegetables may occasionally be met with. Fruits are apparently considered unworthy of the close attention of this thrifty population, and they are rarely to be seen; the Chinese have a bad opinion of trees in the vicinity of cultivation, and do not regard the fruit they yield as a sufficient compensation for their hurtful influence.

The vegetation of China is influenced by a climate with many peculiarities. For the latitude the annual range of temperature is very great; and this is rendered more conspicuous by comparing it with other localities in a similar parallel, as the Philippines, San Blas in Mexico, and Calcutta. A series of observations made at Canton gives 70.4 as the mean temperature, which is below the average. The annual range is from 29^0 to 94^0, and the daily range is also considerable. June, July and August are the hottest months, and their mean temperature is respectively 89^0, 94^0, and 90^0; December, January and February are the coldest, and the mean is $57^0.5$, 51^0, and $51^0.5$.

The condition of the climate with respect to humidity is as variable as that of temperature. The atmosphere, as a general rule, is usually saturated above the average of the latitude; but this is also liable to much fluctuation. The northerly winds will sometimes occasion excessive aridity; while the southerly winds of the spring months, on the contrary, give rise to long-continued damp fogs, and a close moist state of the atmosphere. Rain is registered in all the months; but the least in December and January, according to some protracted observations. The greatest amount falls in May and the four following months, the excess, according to an average of sixteen years, occurring in this month. These observations give an annual average fall of 70.6 inches, but it has been known to attain 90 inches. The great irregularity in the fall of rain is conspicuous on a comparison of the deposit in 1840 with the above. In this year the amount was 61.1 inches, and September was considerably the wettest month, whilst December, which in the long average produces only nine-tenths of an inch, now had six inches. With such a state of deposit the number of rainy days is probably very great, though I find no detail respecting them; and, as a consequence, the saturation of the atmosphere will be such as to bring the prevailing dew-point near the temperature.

Pursuing the circumstances of climate in connexion with the vegetation, it may be observed, that the absence of those tropical forms so usual in this latitude, or their occurrence in such sparing numbers as to make their absence still more remarkable, indicates some feature in the climate prejudicial to their existence. The cocoa-nut, which so often crowds the shores, and delights in the sea-breeze of the tropics, the rich luxuriant vegetation, particularly of ferns, is nowhere seen, and the tropical endogens are scarcely represented. In part this may be attributed to the occasional dryness of the atmosphere, but more, I think, is due to the great range of temperature, and to the extreme depression sometimes occurring. The seasons comprehend a summer with the warmth of the tropics, and a winter as cold and fickle as that of a high latitude, and embrace a temperature ranging through sixty-five degrees. Yet, though this may deprive vegetation here being sheltered from wind and nourished by the soil and streams. On the shoulders of the hills little is seen, beyond fern, stunted grass, and a few poor mean bushes. Trees can scarcely be said to exist; but there is a great variety, in sheltered situations, of low pretty evergreen shrubs, and their prevalence is a leading feature in the vegetation. A large proportion bear berries of different colours, which render them attractive and ornamental. Some difference is easily perceptible between the plants of the elevated vallies and those lower down; a neat *Rhododendron* is almost confined to the greatest heights, and *Photinia serrulata*, though it abounds below, flowers more freely and prettily at an elevation. *Pinus?*—has here a very low range of latitude, as 22⁰ N.E.; but grows only on the west side of the island, where, though without a stunted aspect, the trees are all small, low, slender and delicate. The general appearance of the vegetation decidedly indicates a dry climate, visible in the absence of great luxuriance, in the compact evergreen foliage, and the scarcity of cryptogamic plants, for I observed not a single moss or agaricine fungus.

The flora of China is remarkable for its assemblage of genera from various, and sometimes distant, sources; and in this respect is without a parallel in any other part of the world. Forms, distinctive of Indian vegetation, and of the warm moist Islands of the Malay Archipelago, are freely mingled with others from northern Asia, Europe, and even the eastern parts of North America.

The habit and character of its vegetation is such as it is usual to expect at some distance to the north of its geographical position, and though an enumeration of the species would contain a large proportion very decidedly tropical, they fail to impart their peculiar features.

Enumeration of the plants collected in Hong Kong, by Mr. HINDS, *determined and described by* GEORGE BENTHAM, ESQ.

[The synonyms and references, quoted by Hooker and Arnott in the Botany to Captain Beechey's Voyage, (pp. 166 to 258), are not here repeated.]

Unona *discolor* Vahl.

Phoberos *Chinensis* Lour.—Wight et Arn. Prod. Fl. Penins. Ind. Or. 1. 30.

Blackwellia *Loureiri.*—*Astranthus Cochinchensis*, *Lour.* Perigonii laciniæ 14-17. Stamina sæpissime 7. Styli 3.

Viola *Patrinii*, β *Chinensis*, DC. Prod. 2. 293.—These specimens rather resemble, in habit and character, the specimen of the true *V. Patrinii*, which I have received from Besser, than Bunge's specimens of his *V. prionantha*, to which he refers De Candolle's Chinese variety. The plant is indeed smooth, as in *V. prionantha*, but the stipules are narrow, and the spur shorter. Probably all three plants may be forms of one species.

Viola (*Nonimium*) *tenuis* (sp. n.); acaulis, estolonosa, hirta, foliis ovato-oblongis basi truncatis, stipulis lineari-lanceolatis, pedunculo gracili elongato, calcare brevissimo, *Gordonia* by the more numerous sepals and petals, passing gradually from the short coriaceous external sepals, to the large coloured interior petals.

Atalantia *monophylla* DC.

Oxalis *corniculata* Linn.

Connarus (Rourea, W. et Arn.) *microphyllus* Hook. et Arn.—Foliola usque ad 10-juga, in foliis superioribus sæpius 4-6-juga, omnia obtusa v. obtuse acuminata.

Zanthoxylum *nitidum* DC.—Variat foliolis 3-9, integerrimis crenatisque, costa utrinque aculeata v. inermi.

Berchemia *lineata* DC.

Evonymus *nitidus* (sp. n.); foliis ovatis obovatis oblongisve obtuse acuminatis coriaceis nitidis integerrimis, pedunculis semel bisve dichotomis folio dimidio brevioribus, floribus tetrameris, capsula 4-loculari apice breviter lobata, seminibus solitariis, arilla parva tenui.—I have specimens of the same gathered many years ago in the Horticultural Society's garden, under the name of *E. Chinensis*, but the plant to which Loureiro gave that name must, from his description, belong to some totally different genus.

Catha *monosperma*. *Celastrus monosperma* Roxb. Fl. Ind. ed. Wall. 2. 394.—Roxburgh describes the panicles as axillary and terminal, linear, thin of branches, two, three or even four times longer than the leaves. In the specimens before me, however, they usually bear leaves in the greater part of their length, thus forming flowering branches with small corymbs at the axils of the leaves, the upper corymbs alone form naked panicles. In other respects the plant agrees with Roxburgh's description. The dissepiments of the ovary are incomplete, and in the fruit (which is always by abortion monospermous), they form merely slightly projecting broad ribs in the centre of each valve.

Crotalaria *albida* Heyne, var.? hirsutior, foliis latioribus, legumine vix calycem superante.—Although this looks very different from the opposite extreme form of the species (*C. scoparia*, *Wall.*), the two appear to be connected by a long series of intermediates.

Crotalaria *elliptica* Roxb., W. et. Arn. Prod. 1.

Indigofera *hirsuta* Linn.

Desmodium *triquetrum* DC.

Cantharospermum *pauciflorum* W. et Arn. Prod. 2. 1. 255.

Millettia *nitida* (sp. n.); ramulis petiolisque junioribus tenuiter rubiginoso-tomentosis, foliolis subquinis ovatis v. ovali-oblongis breviter et obtuse acuminatis coriaceis glabris supra nitidis, panicula densa rubiginosa, vexillo sericeo, carina elongata incurva, legumine rubiginoso-villoso demum bivalvi, suturis non incrassatis.—This has precisely the habit and flowers of *Millettia*; but the valves of the pod cohere less closely, and ultimately open; thus connecting the genus in some measure with *Mundulea*. I believe, however, that in most *Millettiæ*, the pod, when very ripe and dry, opens spontaneously. Mr. Hinds's specimens of *M. nitida* are in fruit only, but Sir W. J. Hooker has fine flowering ones from Mr. Millett.

Cæsalpinia *Chinensis* Roxb. — Evidently very near *C. scandens*.

Bauhinia *scandens* Linn. in leaf only.

Rubus *parvifolius* Linn.

Rubus *reflexus* DC.

like Wallich's *O. angustifolia.* It is probable that hree are but varieties of one species.

elastoma *macrocarpon* Don. DC. Prod. 3. 145?—speci- not in flower.

elastoma *calycina* (sp. n.); ramulis petiolis nervisque ıs dense setis appressis obtectis, foliis lato-ovatis acutis r nervos marginales 5-nerviis, utrinque molliter et dense is flavicantibus, floribus 1-5-terminalibus fasciculatis, eis foliaceis 3-nerviis, calycibus maximis setis squamisve bus densissime obtectis, laciniis lanceolato-ovatis longe inatis, staminibus alternis connectivo elongato alternis is.—*M. Malabathrica* Hook. et Arn. Bot. Beech. 186? Linn.—A large-flowered species, much handsomer than *Ialabathrica,* which does not appear to be indigenous to part of China. Mr. Hinds's specimen is not in flower, is evidently the same plant as one from Mr. Vachell, very good flowers, which I have here described. The *ptemnervia* of Loureiro, from Canton, may possibly be *I. macrocarpon,* Don; but is certainly neither *M. Mala- ica* Linn., nor yet my *M. calycina.*

lomorphia *pauciflora* (sp. n.); ramulis inflorescentiaque gineo-tomentellis, foliis ovatis acuminatis basi rotundatis evissime cordatis præter nervos marginales 3-5-nerviis glabris subtus parce ferrugineo-punctatis, panicula laxa iflora, staminibus 4.—Habitu *Dissochætis* nonnullis sub- is. Calycis tubus oblongo-tubulosus, basi brevissime o adhærens cæterum liber, ovario duplo longior, extus gineo-tomentosus, dentibus 4 brevissimis. Petala 4, ato-oblonga, acutiuscula. Stamina 4, antheris linearibus usculis basi emarginatis omnino inappendiculatis. Ova- calyce inclusum et ima basi ei adnatum apice setis ıatum, 4-loculare. Semina obovata, hilo laterali.

ave referred this plant to *Allomorphia,* Blume, notwith- ling the absence of the 4 sterile stamina, as several of the genera are made to include both aplostemonous and stemonous species. The most important character ists in the ovary, entirely included in the bottom of the calyx, although almost wholly free from it, as in *Pachycentria* and *Pogonanthera* amongst Asiatic, and *Jacunda* amongst American genera. The true *Allomorphia* or *Melastoma exigua*, Jack, does not appear to me (at least in the specimens I have from Wallich and some others) to be so entirely deprived of any appendage to the connectivum as it is said to be, nor is the *A.* [illegible]; and perhaps, therefore, too much importance has been attached to this character, and the three genera *Pogonanthera*, *Allomorphia*, and *Pachycentria*, might be united.

Myrtus *tomentosa* Ait.

Bryophyllum *calycinum* Salisb.

Paratropia *Cantoniensis* Hook. et Arn. Bot. Beech. 189.—The specimens are either in young or nearly mature fruit; the stigmas appear to be borne on a short conical style, which would rather connect this species with *Hedera*. The fruit is 10-celled, 10-seeded.

Mussaenda *pubescens* Ait.—Referred by Hooker and Arnott, and perhaps with reason, to *M. frondosa*, Linn.

Ixora *blanda* Ker.

Psychotria *scandens* Hook. et Arn.

Psychotria *serpens* Linn.:—This, and the preceding, are in fruit only.

illosis, foliis petiolatis ovatis obtusis vix acuminatis basi tundatis margine repando-dentatis integerrimisve junioribus trinque villosis adultis supra nitidis subtus dense villoso-mentosis, panicula ampla polycephala subfoliosa villoso-mentosa, capitulis sub-10-floris, involucri squamis ovatis btusis dorso tomentosis floribus multo brevioribus, pappo cteriore brevi pauciseto. Folia 3-4-pollicaria. Pappus bo-nitens, setis rigidis subpaleaceis.

Vernonia (Lepidaploa) *congesta* (sp. n.); ramis striatis ense villosis, foliis sessilibus oblongis ellipticis obovatisve btusiusculis margine minute calloso-denticulatis supra landuloso-scabris hirsutisque subtus dense sericeo-villosis lbidis, cymis densis thyrsoideo-paniculatis, capitulis multi-oris involucri, squamis anguste lanceolatis multiserialibus orso tomentosis, pappi serie exteriori brevi setosa, achæniis illosis.—Pappi series exterior vix a *pilis* achænii distincti. his has something the habit of *Inula Conyza* and also of *ecaneurum divergens*. It is evidently allied to *Vernonia ultiflora*. The pappus is whitish, not brown.

Diplopappus *laxus* (sp. n.); caulibus herbaceis erectis sub-implicibus scabro-pubescentibus, foliis ovatis obovatis blongisve obtusis grosse dentatis basi cuneatis scabris enninerviis subtriplinerviisque, corymbo laxo subfoliato, nvolucri squamis oblongis obtusis appressis dorso pubes-entibus, achæniis plano-compressis sericeo-villosis, pappi erie exteriori brevi pauciseta.—Affinis *D. asperrimo* DC. olia nequaquam acuminata, pleraque petiolata. Capitula ullo majora, involucro pubescente. Pappus *D. asperrimi*.

Diplopappus *baccharoides* (sp. n.); fruticosus, ramis pube-ulis, foliis oblongo-lanceolatis v. obovato-oblongis obtusis v. cutiusculis integerrimis v. remote denticulatis basi angustatis cabris, corymbo terminali oligocephalo conferte folioso, apitulis breviter pedunculatis ovoideis, involucri squamis blongis ciliolatis puberulis laxiusculis, ligulis 8-10, floribus isci 10-15.—Folia conferta, circiter pollicaria, undulata, eticulato-venosa, interdum obscure triplinervia, latitudine ariabilia. Involucri squamæ imbricatæ, pluriseriales. Achænia oblonga, compressa, villosa; radii angustiora. Pappus sordide albus, setis rigidulis scabris v. apice barbellatis, exterioribus paucis brevibus.

Amphirhapis *leiocarpa* (sp. n.); caule erecto simplici apice vix pubescente, foliis ovato-lanceolatis irregulariter dentatis basi in petiolum longe angustatis scabrellis margine ciliato-puberulis glabrisve, thyrso oligocephalo, involucri squamis linearibus acuminatis glabris v. exterioribus ciliolatis, ligulis 5–6, achænio glaberrimo.—Habitus varietatum nonnullarum *Solidaginis virgæ-aureæ.* Achænia compressa, striata. Pappus simplex.

Siegesbeckia *orientalis* Linn.

Wollastonia *scabriscula* DC.

Gnaphalium *confertum* (sp. n.); herbaceum, lana longa dense albidum, caulibus adscendentibus ramosis, foliis linearibus basi cordato-amplexicaulibus subdecurrentibusque supra demum denudatis, capitulis terminalibus dense glomeratis, involucri squamis aureo-nitentibus obtusiusculis, interioribus disco longioribus, floribus fœmineis multiserialibus, hermaphroditis paucis.—Affine *G. multicipiti.* Involucra duplo majora, nitidiora. Flores fœminei numerosissimi.

latis longe acuminatis integerrimis basi angustatis subamplexicaulibus, panicula laxa, pedunculis tenuibus elongatis, involucri cylindrici squamis exterioribus brevibus ovatis margine scariosis, interioribus circa 8 subbiserialibus æqualibus, achæniis substriatis omnibus rostratis.—An *Picris repens Lour.?* sed folia non obtusa. An *Ixeridis* sp.? sed involucrum cylindricum nec ovatum.

Sonchus *oleraceus L.*—*S. ciliatus* DC. Prod. 7. 185.

Brachyrhamphus? *ramosissimus* (sp. n.); glaber glaucus, caule paniculato ramosissimo folioso floribundo, foliis runcinatis dentatis basi amplexicantibus auriculatis, capitulis numerosis breviter pedicellatis cylindricis 10-12-floris, bracteis bracteolisque minimis.—Achænia elongata, transverse muriculata, in rostrum brevem attenuata, disco lato coronata, pappo albo molli.

Lobelia *Chinensis* Lour.—DC. Prodr. 7. 360.

Enkianthus *reticulatus* Lindl.—DC. Prodr. 7. 733.

Enkianthus *quinqueflorus* Lindl.—DC. Prodr. 7. 732.

I have some doubts whether the above two species are really distinct. In the specimens before me, gathered wild by Mr. Hinds in the elevated parts of the island, the form of the calyx is variable; and in none of them are the lobes so pointed as in cultivated specimens of *E. quinqueflorus.*

Enkianthus *uniflorus* (sp. n.); foliis parvis ovatis, gemmis floriferis unifloris, calyce subnullo.—Ramuli primo juventute, petioli, squamæ gemmarum floriferarum interiores, pedicellus, torus et ovarium pilis longis rufis dense obtecta; tota planta cæterum glabra. Rami teretes, subumbellatim ramosi. Folia vix unquam pollicaria, basi angustata, margine siccitate revoluta, reticulato-venosa. Gemmæ floriferæ lanceolatæ. Squamæ obtusæ v. extimæ vix acutæ, intimæ lineari-spathulatæ. Corolla glaberrima, latius campanulata quam in *E. quinquefloro,* basi attenuata. Ovarium 5-loculare, loculis multiovulatis.

Diospyros *vaccinioides,* Lindl.

Sideroxylon *Wightianum* Wall.—with longer leaves than are represented at t. 41, of Hook. et Arn. Bot.—Beech.

Choripetalum *obovatum* (sp. n.) ; foliis ex obovato-oblongis obtusis emarginatisve subtus glaucescentibus, racemis multifloris petiolo subæquilongis, petalis ovatis.—Folia 1-2-pollicaria, longiuscule petiolata, limbo basi angustato. Pedunculus communis brevis, squamis sterilibus obtectus. Pedicelli numerosi, ad apicem pedunculi subcorymbosi, petalis subæquilongi; singuli ex axillâ bracteæ fuscæ nati. Petala 4, separatim caduca, æstivatione contorta. Filamenta antheris longiora, ad basin petalorum adnata. Stylus brevis. Stigmata parum dilatata. Placenta centralis 4-ovulata.

Embelia *Ribes* Roxb.—I find the flowers frequently tetramerous.

Mœsa *nemoralis* Alph. DC. in Linn. Trans. 17, 134.—This answers perfectly to Roxburgh's description, except that the ovary is adherent as in other *Mœsæ*.

Ardisia *crispa* Alph. DC. l. c. 124.

Ardisia sp., affinis *A. neriifoliæ* ; in fruit only.

Jasminum *paniculatum* Roxb. Fl. Ind. 1.97.

Strychnos *Nux vomica* Linn.

Cerbera *Odollam* Gærtn.—Roxb. Fl. Ind. ed. Wall. 2. 527.

Hollarrhena *affinis* Hook. et Arn.—Specimens too young

Pterostigma *grandiflorum* Benth.

Bonnaya *verbenæfolia.* Spreng.—Benth. Scroph. Ind. 33.' !

Mitrasacme *capillaris* Wall. in Roxb. Fl. Ind. 1.420? A ingle specimen with elongated somewhat dichotomous inlorescence.

Utricularia *recurva* Lour. Fl. Cochinch. 26? Apparently he same as *U. racemosa* Wall.

Utricularia *bifida* Linn.

Barleria *cristata* Linn.

Rostellaria *procumbens* Nees.

Amaranthus *oleraceus* Linn.

Polygonum *orientale* Linn.—Meisn. in Wall. Pl. As. Rar. i. 54. var? *discolor;* caule glabriusculo, foliis lanceolatis v. vato-lanceolatis parce pilosis subtus lana tenui albidis, spicis rectis brevibus, floribus confertis. This has a very different spect from the common *P. orientale,* but if *P. pilosum* Roxb. e but a form of that species, this one also must be included n it. The structure of the flower is the same as in the ommon *P. orientale.*

Polygonum *Chinense* Linn. Meisn. *l. c.* 60.

Daphne *indica* Linn.

Cansjera *lanceolata* (sp. n.); foliis brevissime petiolatis latoanceolatis acuminatis margine undulato-crispis, staminodiis nguste lanceolatis.—Folia angustiora et longiora quam in C. *Rheedii.* Flores ejuisdem magnitudinis, at minus inflati. Staminodia duplo longiora. Ramuli fere glabri, novelli striati, ec etiam juniores teretes tomentosi ut in *C. Rheedii* observantur, cui etiam staminodia brevia, lato obovato-truncata.

Cassytha *filiformis* Linn.

Glochidion *macrophyllum* (sp. n.), glabrum, foliis breviter petiolatis ovali-ellipticis brevissime acuminatis coriaceis supra itidis, pedunculis fœmineis petiolum vix æquantibus, fructu 7-8 loculari pulveraceo-puberulo.—The leaves are four or five nches long and full two in breadth. The fruit is like that of R. *Sinicum,* but rather larger, consisting usually of 7 or 8 occi and apparently red. I have not seen the flowers.

Melanthera *cernua,* Decaisne, Herb. Timor. 155.

Ricinus *communis*. Linn.

Ficus *pyriformis*, Hook. et Arn.

Ficus *variolosa* Lindl. I have had specimens of this plant for many years, which were dried under that name from the Horticultural Society's Garden, but as I cannot find out where it has been published, I subjoin the following specific character: glaberrima, foliis petiolatis obovato-v. sublanceolato-oblongis obtusis v. breviter et obtusissime acuminatis basi cuneatis coriaceis opacis subtus pallidis eleganter venosis, receptaculis axillaribus solitariis geminisve pedunculatis parvis suburceolato-globosis. Folia 2-2½ poll-longa, 8-12 lin. lata, venis subtus rubentibus, petiolis 2-4 lin. longis. Pedunculi 2 lin. longi. Bracteolæ parvæ, ovatæ, acutæ. Receptacula 2½ lin. diametro, forma floribus *Arbuti* non dissimilia, extus variolosa.

Sponia *aspera* Decaisne Herb. Timor ? These specimens certainly differ from *S. Andaresa* by the leaves deeply and equally cordate at the base, exceedingly rough on the upper side, and thickly hairy on the under, but whether or not it be really the plant figured by Ad. Brongniart as *Celtis aspera*, I have not at present the means of determining.

Pinus *Sinensis* Lamb. The leaves are sometimes two, sometimes three in a sheath.

as is distinctly shown by its well preserved pollen masses. It is equally certain that no Asiatic genus of that part of the Orchidaceous order will contain it. The only doubt that I entertain respecting it is, whether to place it in *Barkeria* or *Broughtonia*. The habit is more that of the former than of the latter; but it has the adnate spur belonging to the labellum of *Broughtonia*, and it has not, as far as I can discover, the peculiarly deflexed dorsal sepal of *Barkeria*. Its lip too is distictly cucullate after the manner of a *Lælia*. (*Lindley*.)

Smilax *glabra* Roxb. The younger leaves are glaucous underneath, the lower older leaves are broader and not glaucous.

Smilax *sp.* in leaf only.

Dianella *ensifolia* Ait. Schult. Syst. 7. 349

Asparagus *falcatus* Linn.

Eriocaulon *Cantoniensis* Hook. et Arn. My specimens are young, but are evidently very near to *E. Wallichianum*, Mart. in Wall. Pl. As. Rar. 3. 26. t. 249. The E. *Cantoniensis* is not taken up by Künth either as a species or a synonym.

Lepidosperma *Chinense* Nees. These specimens agree better with the character piven by Hooker and Arnott, (Bot. Beech. 228) within brackets, than with Nees's decription. The whole spike is from 1½ to 2 inches long. The lower partial spikes, which are sessile or very shortly peduncled, consist of several smaller spikes, and each of these again of one, two, or three spikelets. In each spikelet I find one, two, or three flowers, the upper one always abortive, the next one hermaphrodite, and there is often a third male flower below it, with three stamens like the hermaphrodite one. The hypogynous scales are connected into a white, almost bony, perigynium, unequally and very sharply 5-6 toothed.

Scleria *Chinensis* Künth. Enum. 2. 357. *S. ciliaris*, Nees, non Mich.

Carex *ramosa* Nees.

Rottboelliæ ? *sp.*, in an imperfect state.

Bambusa *sp.* not in flower.

Erianthus *Japonicus* Beauv.
Lycopodium *cernuum* Linn.
Osmunda *Javanica* DC.
Osmunda *Vachellii* Hook. Ic. Pl. 1. t. 25.
Mertensia *Hermanni* Hook. et Arn.
Lygodium *Japonicum* Sw.
Niphobolus *pertusus* Spr.
Polypodium *phymatodes* Linn.
Aspidium (*Nephrolepis*) *exaltatum* Sw.
Aspidium (*Nephrodium*) *molle* Sw.
Aspidium (*Cyrtomium*) *falcatum* Sw.
Pteris *semipinnata* Linn.

Meniscium *simplex* (*Hook. Lond. Journ. of Bot.* 1. *p.* 294, *t.* xi.) fronde simplici oblonga acuminata dentata basi profunde cordata subhastata subtus pubescente.—If here were a solitary specimen, I should think it possible this might be a simple state of *M. triphyllum*; but the several specimens, the form and great breadth of the frond, and the semipellucid nature of that frond, downy beneath, forbid such an opinion. (*W. J. Hooker*).

Blechnum *orientale* Sw.
Adianthum *amœnum* Wall.
Lindsæa *polymorpha* Wall.

s subglabris, pedunculis capitulisque glabris, legu-
indraceo turgido v.-subfusiforme subincurvo gla-
arcto indehiscente, seminibus confertis irregulariter
.—*Vachellia Farnesiana*, W. et Arn. Fl. Penins.
i. 272.—*Farnesia odora*, Gasparini.—*A. pedunculata*
pec. iv. 1084.—*A edulis.* Willd. Enum. 1036 ?—
olis latioribus angustioribusque; pube nunc rara v.
nc in ramulis petiolisque densiore. A shrub gene-
ivated in the warmer climates of both hemispheres
erfume derived from its flowers. It appears to be
y indigenous in America, from New Orleans, Texas,
ico, to Buenos Ayres, and Chili. It also frequently
collections from the Mediterranean, from Africa,
India, and even from the Phillippine Islands, and
n Archipelago, but, in most of these cases, at least,
vated.

A. Cavenia (Hook. et Arn. in Bot. Beech, 21), pu-
scabra v. glabriuscula, spinis rectis, pinnis 5-10-
ndulis depressis parvis, foliolis 10-20-jugis minimis
linearibus obtusis, legumine crasso oblongo-cylin-
rgido v. subfusiformi subincurvo glaberrimo, semi-
nfertis.—*A. aromatica*, Popp. Fl. Exo. n. 177.—
A. farnesiana distinguitur nisi foliolis vix unquam
longioribus et legumine paullo breviore.—Common
nd Buenos Ayres.

A. cochliacantha, (Humb. et Bonpl. in Willd.
1081). This species is unknown to me. From
figure and description, (Mim. 93. t. 29), it appears
he foliage and flowers of *A. Cavenia*, but many of the
e large and inflated, concave underneath. The pod
wn.—Guayaquil, *Humboldt and Bonpland.*

A. choriophylla (sp. n.), floribus exceptis glaberrima,
minutis spinescentibus nunc obsoletis, pinnis 1-2-
ndulis depressis obscuris, foliolis 3-5-jugis oblongo-
ovalibusve obtusissimis coriaceis nitidis, pedunculis
ulis, capitulis puberulis, legumine oblongo-falcato
laberrimo, seminibus confertis.—Foliola foliis *Buxi*

similia. Pedunculi pollicares, superiores fasciculato-racemosi. Capitula densissime imbricata. Legumen fere *A. Farnesianæ* sed brevius, latius.—Bahamas, *Swainson*.

240. *A. acuifera* (sp. n.), glabra, spinis subulatis, pinnis unijugis, glandula stipitata, foliolis 10-12-jugis oblongis obtusissimis demum coriaceis nitidis, pedunculis folium subæquantibus, capitulis glaberrimis, legumine glaberrimo.—Spinæ tenues, 6-9-lin. longæ. Petioli communes breves, partiales 1-1½ pollicares, glandulis sub jugis ultimis foliolorum 1-2. Foliola adulta 4 lin. longa. Capitula iis *A. Farnesianæ* minora. Flores nitidi. Legumen junius tantum vidi.—Bahamas, *Swainson*.

241. *A. erioloba* (E. Mey, Comm. Pl. Afr. Austr. i. 171), spinis rectis, foliis glabris pallidis, pinnis trijugis, glandulis ad omnia paria, foliolis 8-10-jugis lineari-oblongis obtusis, legumine lignoso indehiscente semilunato tumido utrinque attenuato tomento subfurfuraceo albente intus spongioso farcto.—Namaqua Land, *Schmeling*.—I have not seen this species, but, from E. Meyer's account, it appears to differ from *A. Farnesiana*, chiefly by the downy pod. It may possibly be the same as the following.

242. *A. giraffæ* (Burch. Trav. ii. 240; an Willd?) glaberrima, spinis rectis, validis, fuscis, pinnis 1-3-jugis, glandulis

of *A. giraffæ*, for Burchell's plant, which may be the as Willdenow's.

. *A. Mauroccana* (DC. Prod. ii. 461), ramis petiolisque tenui cano-tomentosis, spinis aculeiformibus brevibus curvis, pinnis 3-8-jugis, glandulis scutellæformibus , foliolis 10-20-jugis oblongo-linearibus junioribus puberulis demum glabratis subnitidis, pedunculis ibus, legumine lato-lineare plano subfalcato margine sato valvulis crasso-coriaceis puberulis tardius dehiscen- seminibus dissitis.—Foliola regulariter pennata 2-lin. Legumen 3 poll. longum, 5 lin. latum.—Morocco, *ntaines*. I have only seen it cultivated.

l. *A. heteracantha* (Burch. in DC. Prod. ii. 473), ramis isque pubescentibus, spinis brevibus uncinato-recurvis gissimis rectis omnibus pubescentibus, pinnis 5-10-jugis, ulis parvis paucis, foliolis 10-15-jugis oblongo-lineari- uberulis glabratisve, legumine linearæ.—Interior of the near the Gariep, *Burchell*.—I have seen but a very im- t specimen, which has much of the appearance of *A. occana*, but with smaller and more numerous leaflets. ps this and the *A. Litakunesins*, (Burch. Trav. ii. 452), I have not seen, and is very imperfectly described, e nearer allied to *A. planifrons*.

A. hæmatoxylon (Willd. Enum. 1056), ramis foliolisque nto brevi incanis, spinis plerisque longis rectis subulatis, 8-19-jugis, glandulis parvis paucis, foliolis minimis l-jugis arcte imbricatis incanis, legumine lineare falcato tomentoso farcto seminibus dissitis.—*A. atomiphylla*, n. Trav. i. 341. Pinnæ, vix 4 lin. longæ, foliola ant linearia. Foliola vera vix 2 lin. longa. Legumen s compressum, suturis crassioribus, adultum subtereti sum.—Kloof Valley, interior of the Cape, *Burchell*.

3. *A. Adansonii* (Guillem. et Perr. Fl. Seneg. i. 251), lis petiolisque canescentibus, spinis parvis erectis, s 10-20-jugis, glandulis scutellæformibus, foliolis 20-30- oblongo-linearibus obtusis pallide subglaucescentibus demum nitidis, capitulis albido-puberulis.—*Mimosa*

adstringens Thon. et Schum. Beskr. Guin. Pl. 327.—*A. Maroccanæ* affinis, differt imprimis spinis erectis nec recurvis, nec ab *A. Sieberiana* dissimilis etsi magis canescit, et bracteæ, ut in omnibus præcedentibus, capitulo denso arcte approximatæ.—Senegal.

247. *A. Sieberiana* (DC. Prod. ii. 463), ramulis junioribus petiolisque subtomentellis mox glabratis, spinis rectis demum eburneis, pinnis 10-30-jugis, glandulis scutellæformibus paucis, foliolis 20-40-jugis oblongo-linearibus obtusis glabris supra nitidis, pedicellis infra apicem bracteatis, capitulis puberulis. —Senegal, *Sieber*.—The pod is unknown.

§ 2. *Medibracteatæ*.—Inflorescentia capitata. Bracteæ versus medium, v. supra basin pedunculi in involucellum persistens v. deciduum connatæ. Legumen sæpius planum, coriaceum v. membranaceum, rarius turgidum. Species omnes Africanæ v. Indicæ.

248. *A. Nubica* (sp. n.), ramulis petiolisque albidis molliter villosis, spinis brevibus validis rectis, pinnis 6-10-jugis, glandulis scutellæformibus paucis, foliolis 10-15-jugis oblongo-linearibus obtusis, pallidis pilosulis, pedunculis tomentosis infra medium bracteatis, capitulis tomentosis.—Nubia (Cordofan?) *Kotschy* n. 407 of the Un. Itin.—This species resembles in many respects *A. Adansonii* and *A. Sieberiana*

251. *A. Jacquemonti* (sp. n.), glaberrima, spinis demum longissimis eburneis, ramulis teretiusculis, pinnis 2-4 jugis, glandulis parvis obsoletisve, foliolis 5-10-jugis oblongo-linearibus obtusis crassiusculis, pedunculis axillaribus medio bracteatis, legumine longe stipitato lato-lineare tenuiter membranaceo plano recto glaberrimo. Legumen 3-4-poll. longum, 6-8-lin latum.—Banks of the Nerbuddah, and dry hills about Thonna and Radjouri in N. India, *Jaquemont*; Valley of Fatme, in Arabia, *Fischer*, n. 37 ?—The latter specimens are in flower only, and I am not certain of their identity.

252. *A. Aucheri* (sp. n.), pube minuta pallens subflavicans, spinis conicis rectiusculis, pinnis 2-3-jugis, glandulis parvis obsoletisve, foliolis 6-8-jugis linearibus obtusis crassiusculis submarginatis, pedunculis brevissimis (medio bracteatis ?) legumine lato-lineare subsessile leviter falcato, valvulis convexis flavicanto-puberulis.—I have seen but a very indifferent specimen in fruit, in Aucher. Eloy's Oriental collection, n. 4372.

253. *A. suberosa* (Cunn. MSS.), ramulis petiolisque hirtellis, spinis brevibus tenuibus subrectis, pinnis 1-2-jugis, glandula parva villosula, foliolis 8-12-jugis oblongo-linearibus obtusis crassis utrinque hirtellis, legumine anguste lineare curvato turgido subtoruloso canescenti-puberulo.—N. W. coast of Australia, *Cunningham*. This species has some resemblance to the preceding, but I have seen it only in a very imperfect state. It is remarkable as the only one of this series found in Australia. The branches seem to become corky when old.

254. *A. hebeclada* (DC. Cat. Hort. Monsp. 73 ex syn. in Prod ii. 461) ramulis petiolis pedunculisque piloso-hispidis, spinis subulato-conicis subrecurvis, pinnis 3-7-jugis, glandulis parvis, foliolis glabratis, pedunculis supra basin v. ad medium bracteatis, legumine recto flavo oblique striato cavo.—*A. stolonifera*, Burch. Trav. ii. 240.—Frutex caulibus subterraneis stoloniferis, *Burchell*. Legumen ipse non vidi.—Ongeluks Fountain, interior of the Cape, *Burchell*.

255. *A. arabica* (Wild. Spec. iv. 1085), glabra v. tomentoso-pubescens, spinis minimis longisve subulatis validisve demum eburneis rectis subrecurvisve, pinnis 4-8-jugis rarius 1-3-jugis, glandulis scutellæformibus petiolari sæpe majuscula, foliolis 10-20-jugis oblongo-linearibus obtusis viridibus glabris v. vix ciliolatis, pedunculis axillaribus medio bracteatis capitulis globosis, legumine plano lineare moniliforme valvulis coriaceis intus tenuiter pulposo.—This very variable species should probably include the *A. Nilotica*, and *A. vera* of different authors, if, as is maintained by many, the downy or smooth pod is not a specific distinction. The following are the principal forms I have seen :—

α. tomentosa, ramis petiolis pedunculisque dense tomentosis, spinis rectis, legumine diu (etiam maturo ?) canotomentoso.—*A. Arabica*, Guillem. Fl. Seneg. i. 250, and of most African authors.—Senegambia, *Heudelot* and others.

β Kraussiana, ramis petiolis pedunculisque dense tomentosis, spinis validis subrecurvis, legumine juniore tomentoso demum sublævigato.—Port Natal, *Krauss*, n. 69.

γ Nilotica, ramis petiolis pedunculisque glabris v. leviter puberulis, legumine (etiam juniore ?) glaberrimo.—*A. Nilotica* glabra, spinis rectis, pinnis unijugis, petiolo brevissimo vix ullo, glandula sessili, foliolis 5-9-jugis linearibus obtusis subglaucis, capitulis ovalibus pedunculatis.—This also is unknown to me, and is perhaps a mere variety of *A. gummifera*, from which it is said to differ chiefly by the shortness of the petiole.—Mogador, *Broussonet*.

258. *A. robusta* (Burch. Trav. ii., 442,) glabra, spinis validis nonnullis elongatis eburneis, pinnis 2-4-jugis remotis, glandulis jugalibus 1-2, petiolari nulla, foliolis 8-13-jugis oblongo-linearibus obtusis, pedunculis axillaribus infra medium bracteatis, capitulis globosis, legumine plano recto continuo nudo bivalvi.—Rami et ramuli robusti. Pedunculi ex gemmis ramulorum annotinorum orti. Facies fere *A. arabicæ* sed legumen (quod ipse non vidi) diversum.—Interior of the Cape, *Burchell*.

259. *A. tomentosa* (Willd. Spec. iv., 1087,) ramis petiolisque velutino-tomentosis, spinis nunc minutis nunc longissimis validis fuscis, pinnis 10-12-jugis, glandulis scutellæformibus, petiolare oblonga, foliolis 20-30-jugis linearibus obtusis pubescentibus, pedunculis axillaribus medio bracteatis, capitulis tomentosis, legumine latiuscule lineare plano falcato-subcontorto coriaceo minute puberulo.—Pinnæ 1-1½-pollicares. Foliola 3 lin. longa. Legumen 3-4-lin. latum.—Peninsula and plains of India, *Roxburgh*, *Wight*, (Wall. Cat. n. 5247).

260. *A. eburnea* (Willd. Spec. iv. 1081,) ramulis foliisque ferrugineo-villosulis, spinis rectis nonnullis longis eburneis, pinnis 2-4-jugis parvis, glandula petiolare majuscula, foliolis 6-8-jugis minimis linearibus obtusis hirtellis, pedunculis axillaribus medio bracteatis legumine stipitato anguste lineare falcato subplano glaberrimo. Folia spinis sæpius breviora. Pinnæ vix 2 lin. longæ.—Foliola conferta ½ lin. longa. Legumen 2-3 poll. longum, circa 2 lin. latum, glaucescens. Specimina mea villosa, cæterum cum descriptione Willdenowiana conveniunt.—E. India (Peninsula?) *König.*; Ougein, *Jacquemont*.

261. *A. Seyal* (Delile Pl. Æq. 142. t. 52. f. 2,) glabra v.

ramulis puberulis spinis brevibus conicis v. elongatis subrectis eburneis, pinnis 2-5-jugis, glandulis parvis v. obsoletis, foliolis 8-12-jugis oblongo-linearibus, pedunculis prope basin bracteatis, capitulis glabriusculis, legumine anguste lineare falcato demum contorto plano glabro coriaceo.—*A. giraffæ* Sieb. Herb. Fl. Seneg. n. 45 non Willd.—Folia valde variabilia, nunc vix pollicaria foliolis confertis minimis, nunc 2-3-pollicaria foliolis laxis 2-3 lin. longis.—Senegal and Egypt, *Sieber and others.*—In Sieber's Egyptian collections, under *A. Seyal;* I have always found two specimens, one in fruit belonging to this species, the other in flower is the *A. Arabica,* or some species allied to it, perhaps *A. gummifera,* (Delile non Willd.) I have also seen the same, or a closely allied species, in Schimper's Abyssinian collection, under the name of *A. giraffæ?* n. 218, and *Mimosa Habbas?* n. 382.

262. *A. hirtella* (E. Mey, Comm. Pl. Afr. Austr. 167,) ramulis petiolis foliolisque hirtellis, spinis rectis subulatis, pinnis 6-8-jugis, glandulis parvis, foliolis 10-15-jugis oblongo-linearibus, pedunculis glabriusculis medio bracteatis, legumine stipitato anguste lineare subfalcato plano glabro. — Inter affinibus hirsutie distinguitur. Legumen fere *A. horridæ.*—Between Omcomas and Omblas in South Africa, *Drège.*

2-7-jugis, foliolis 12-30-jugis oblongo-linearibus obtusis crassiusculis, pedunculis medio bracteatis plerisque axillaribus, petalis apice revolutis, legumine crasso complanato lanceolato-curvato, valvulis convexiusculis rigide coriaceis.—*A. clavigera* E. Mey, l. c. 168.—Legumen vix 4 poll. longum, semipollice latius.

The *A. Burmanniana*, DC. Prod ii. 461, is evidently allied to the two preceding species, but is said to be E. Indian, from Burmann's collection. I have never seen any specimen from that country which answers the description, and cannot help thinking it must have been an *A. horrida* mislaid from Burmann's Cape collection.

266. *A. leucophlæa* (Willd, Spec. iv. 1063,) spinis rectis ramis petiolisque tomentellis v. demum glabris, pinnis 5-12-jugis, glandulis parvis scutellæformibus, foliolis 12-30jugis-oblique oblongo-linearibus obtusis rigidis tomentellis glabrisve, capitulis breviter pedunculatis in paniculam amplam aphyllam tomentosam dispositis, pedunculis medio bracteatis, legumine anguste lineare subtortuoso crasso-complanato tomentoso v. demum glabrato.—*A. alba* Willd. DC. Prod. ii. 469.—Readily distinguished by the inflorescence.—E. India, from the Peninsula to the Burmah territory. (Wall. Cat. n. 5261, 5262, and 5263).

A. viridiramis (Burch. Trav. i. 300,) of which I have seen but a very imperfect specimen, is a distinct species, belonging to one of the above groups.

§ 3. *Basibracteatæ*. Inflorescentia spicata, rarius capitata. Bracteæ ad basin pedunculi v. nullæ. Legumen (ubi notum) planum, coriaceum v. incrassatum.

267. *A. sphærocephala* (Cham. et Schl. Linnæa, v. 594,) floribus exceptis glaberrima, spinis albidis plerisque inflato-corniformibus maximis, pinnis 6-8-jugis, glandula petiolari magna elevata, foliolis laxe 10-20-jugis linearibus obtusis, pedunculis brevibus basi bracteatis, capitulis subglobosis superioribus paniculato-racemosis.—*Mimosa cornigera* Linn. Spec. ex parte.—Foliola 3 lin. longa, floralia ad bracteam

glanduliferam reducta. Stamina corolla dimidio longiora.—Mexican Coast from Vera Cruz to Texas.

268. *A. spadicigera* (Cham. et Schl. Linnæa, v. 594,) glabra, spinis, plerisque inflatis maximis corniformibus, pinnis 3-6-jugis, glandulis scutellæformibus, foliolis 15-20-jugis oblique linearibus obtusis, spicis cylindricis densissime imbricatis, calyce inflato corolla paullo breviore.—*Mimosa cornigera*, Linn. ex parte.—Spicæ pollicares v. paullo longiores pedunculo basi bracteato. Flores nonnisi masculos vidi, staminibus in columnam centralem breviter et irregulariter pluriseriatim connatis. — Vera-Cruz, *Houstoun*, Panama, *Cuming* n. 1270.

269. *A. Hindsii* (sp. n.), glabra, spinis brevibus nonnullis maximis inflatis corniformibus, pinnis 6-15-jugis, glandulis parvis elevatis numerosis, foliolis 12-20-jugis oblique linearibus obtusis, spicis tenuiter cylindricis, calyce inflato corolla dimidio breviore.—Spicæ 1-1½-pollicares. Flores vidi hermaphroditos, staminibus circa ovarium breviter et pluriseriatim irregulariter connatis, exterioribus demum usque ad basin liberis. A præcedente spicis tenuibus facile distinguitur. — Manzanilla Bay, Mexico, *Hinds*.—In the three preceding species, as well as in *A. cochliacantha*, *planifrons*, and *latronum*, and perhaps some others, the spinescent

breviter pedunculatis folio longioribus.—Spinæ nunc 1-2-lin. sæpius 6 lin. longæ, interdum pollicares. Foliola 4-5-lin. longa, penninervia. Spicæ pollice longiores. Flores sæpius 4-meri. Stamina ut in *A. Hindsii.*—Texas, *Drummond*, 3rd coll. n. 161; *Berlandier* n. 1387, and 1413.

271. *A. amentacea* (DC. Prod. ii. 455), glabra, spinis rectis, pinnis unijugis, petiolo brevissimo, foliolis bijugis oblongis, spicis oblongo-cylindraceis sessilibus densis amentiformibus. Mexico, *Mocino* and *Sepé.*—Unknown to me; the above character is taken from De Candolle.

272. *A. flexicaulis* (sp. n.), ramis flexuosis albidis petiolisque puberulis demum glabratis, spinis brevibus conicis rectis, pinnis bijugis, glandulis parvis substipitatis, foliolis pinnæ extimæ 4-6-jugis obovato-oblongis obtusissimis membranaceis glabris, spicis cylindricis, legumine sessile lineare recto crasso glabro.—Pinnæ inferiores breves pauci-foliolatæ. Foliola paullo minora quam in *A. rigidula* et multo tenuiora. Spicæ fructiferæ rhachis sesquipollicares. Flores non vidi. Legumen in specimine immaturum jam sesquipollicare et subcarnosum videtur.—Texas, *Berlandier*.

273. *A. albida* (Delil. Fl. Æg. 143. t. 52. f. 3.) ramis albidis glabriusculis, spinis validis rectis, petiolo glandulifero, pinnis 2-4-jugis, foliolis 7-12-jugis oblique oblongis obtusissimis glabris v. subtus pilosulis, spicis laxis folio longioribus, calyce corolla subtriplo breviore, legumine oblongo-lineari falcato coriaceo glabro subindehiscente.—Egypt, *Traill, Sieber, Aucher-Eloy n.* 958.

β *Senegaleniss*, pinnis 5-7-jugis.—Senegambia, *Robert, Brunner, n.* 72. This is probably one of the white barked species confounded by Linnæus and others, under the name of *Mimosa Senegal.*

274. *A. saccharata* (sp. n.), ramulis albidis puberulis, spinis brevissimis obsoletisve, petiolo pubescente glandulifero, pinnis 6-8-jugis, foliolis 10-15-jugis oblique oblongo-linearibus obtusis pubescentibus, spicis folio sublongioribus, calyce pubescente corolla dimidio breviore. An *A. albidæ* var. subinermis? Arbor est (teste Heudelotio) 40-50-pedalis,

floribus albidis odoratis, legumine pulpa saccharata repleta, Common in the Cayor, *Heudelot, n.* 391.

275. *A. latronum* (Willd. Spec. iv. 1077), glabriuscula, spinis rectis hinc inde maximis corniformibus, pinnis 2-5-jugis, glandulis scutellæformibus, foliolis 6-15-jugis parvis linearibus oblongisve obtusis, spicis cylindricis laxis subinterruptis, calyce corolla 4-plo breviore, legumine late falcato oblongo plano coriaceo glabro. Spinæ pleræque semipollicares, corniformes subbipollicares. Foliola nunc brevissima vix linea longiora, nunc 2-3 lin. longa. Spicæ sesquipollicares glaberrimæ. Legumen 1½-2 poll. longum, 7-9 lin. latum, venosum, sutura superiore fere recto, inferiore valde convexa. —East Indian Peninsula, *Roxburgh*, *Koenig*, *Wight* (*Wall. Cat. n.* 4245.

276. *A. Lahai* (Steud. et Hochst. Pl. Schimp. exs.), glabriuscula, spinis rectis, pinnis 6-10-jugis, glandula parva verrucæformi, foliolis 12-20-jugis parvis linearibus obtusis, spicis cylindricis folio subbrevioribus laxis, floribus sessilibus glabris, calyce corolla 3-4-plo breviore, legumine late oblongo plano coriaceo glabro.—*A. fasciculata* Br. in Salt. Abyss. App.—Præcedenti affinis. Spinæ nunc breves subulato-conicæ, nunc pollicares validæ. Spicæ sesquipollicares, rhachi puberula, pedunculo brevi basi squamis membranaceis fuscis deciduis suffulto. Corollæ tenues 1½ lin. longæ. Legumen, stipitatum 2 poll. longum, 1 poll. latum, fere rectum nitidum, venosum.—Valleys near Ado in Abyssinia, *Schimper.*

A. albicans (Künth. Mim. t. 27) from Campeachy, is entirely unknown to me. It appears to have spinescent stipules though they are not connate, the inflorescence is rather that of the capitate *Vulgares* than of the *Gummiferæ*, and the flowers are said to be white. The pod is unknown.

Series v. Vulgares. *Stipulæ non spinescentes. Aculei infrastipulares, sparsi, v. nulli. Folia bipinnata petiolo glandulifero. Inflorescentia capitata v. spicata, simplex. Pedunculi subfasciculati axillares v. ad apices ramorum racemosi v. paniculati, nudi v. basi 2-4-bracteati.*—Frutices v.

arbores, sæpe scandentes, in regione calida utriusque orbis crescentes. Stipulæ nunc subulatæ molles, nunc membranaceo-dilatatæ, sæpe obsoletæ. Folia raro fasciculata. Glandula petiolaris rarissime deest, adsunt etiam sæpius jugales 1 vel plures ad paria pinnarum superiora v. omnia, et nonnunquam ad paria foliolorum suprema. Spicæ v. capitula superiora sæpissime paniculata, pedunculis propriis geminis fasciculatisve rarius solitariis. Bracteæ sæpius parvæ. Legumen-lato, lineare nunc membranaceum indehiscens, nunc chartaceo coriaceum bivalve, nunc (in *Concinnis*), canosum incomplete dehiscens.

§ 1.—*Diacanthæ*. Inflorescentia spicata rarissime subglobosa. Aculei 2 oppositi infrastipulares adjectis interdum petiolaribus v. infra foliaceis.—Species omnes Asiatic v. African.

* *Legumine membranaceo indehiscente.*

277. *A. mellifera*, glabra, cinerascens, aculeis infra-stipularibus geminis recurvis, petiolo inermi, pinnis bijugis, foliolis unijugis oblique obovato-oblongis obtusissimis retusisve, spicis laxis folio longioribus, pedicellis calyce longioribus, calyce truncato corolla triplo breviore, legumine ensiforme glabro membranaceo.—*Mimosa mellifera*, Vahl. Symb. iii 103.—*Inga mellifera*, Willd. Spec. iv. 1006.—Ramuli flexuosi. Folia et spicæ fasciculata. Glandulæ parvæ, depressæ. Foliola jugi extimi subsemipollicaria, inferiora minora. Spicæ (v. potius racemi) sesquipollicares. Calyx laxus. Corolla hyalina, petalis eleganter penniveniis. —Æthiopia, *Kotschy*, *n.* 258, "Surdud alibique," *Forskol.*

278. *A. detinens* (Burch. Trav. 1. 310.) glabra, aculeis infrastipularibus geminis recurvis, petiolo subinermi, pinnis subtrijugis, foliolis unijugis oblique obovatis obtusissimis, capitulis laxis subglobosis, pedicellis calycem subæquantibus, calyce truncato corolla subtriplo breviore, legumine ovali plano membranaceo oligospermo. *A. melliferæ* et *A. hamulosæ* affinis. Racemi capituliformes, sæpius globosi, nunc oblongi. Foliola circiter 3 lin. longa. Petioli apice recurvo-setiferi. Flores *A. melliferæ*.—Kloof Valley, S. Africa, *Burchell.*

279. *A. modesta* (Wall. Cat. Herb. Ind. n. 5230), glabra, cinerascens v. glauca, aculeis infrastipularibus geminis subrecurvis v. nullis, petiolo inermi, pinnis 2-3-jugis, foliolis 3-5jugis oblique obovato-oblongis obtusis retusisve, spicis axillaribus laxis folio longioribus, calycibus brevissime pedicellatis truncato-dentatis corollæ dimidium subæquantibus, legumine lato-lineari membranaceo glabro.—*Mimosa obovata* Roxb. Fl. Ind. ii. 561.—Ab *A. melliferá* differt præcipue foliolis numerosis 3-4 lin. longis et pedicellis brevioribus. Legumen 3-4-pollicare, 6-8 lin. latum.—North India, *Royle*.

280. *A. læta* (Br. in Salt. Abyssin. App.), glabra, pallida v. glauca, aculeis infrastipularibus geminis subrecurvis v. nullis, petiolo inermi, pinnis subtrijugis foliolis 3-5-jugis oblique cuneato-oblongis obtusis mucronulatisve, spicis axillaribus laxis folia æquantibus, calycibus subsessilibus dentato-lobatis corollæ dimidium æquantibus, legumine stipitato latissime oblongo membranaceo glabro.—Affinis *A. modestæ*. Foliola distantia, 4-6 lin longa. Legumen 3 poll. longum, 1½ poll. latum.—Abyssinia, *Salt*.

281. *A. lenticularis* (Ham. in Wall. Cat. Herb. Ind. n. 5244), glaberrima, glaucescens aculeis infrastipularibus geminis subrecurvis v. nullis, foliis amplis, petiolo inermi, pinnis 2-3-jugis, foliolis 6-8-jugis oblique obovato-oblongis retusis venosis, spicis axillaribus folio brevioribus, floribus sessilibus glabris, calyce dentato lobato corolla dimidio breviore.—Foliola pollicaria v. paullo majora. Spicæ cum pedunculo 4-5-pollicares. Flores numerosi, majusculi.—North India, *Hamilton*, *Royle*.

282. *A. ferruginea* (DC. Prod. ii. 458), glabriuscula, cinerascens v. glauca, aculeis infrastipularibus geminis subrecurvis v. nullis, petiolo inermi, pinnis 3-6-jugis, foliolis 10-20-jugis oblongo-linearibus obtusis, spicis axillaribus laxis folio sublongioribus, floribus sessilibus, calyce pubescente dentato corollæ dimidio breviore, legumine late oblongo-lineare plano membranaceo-coriaceo indehiscente.—E. Indian Peninsula, about Naltchah and Mundlayir, *Jaquemont*.

83. *A. hamulosa* (sp. n ?) glabra, cinerascens, subglauca,
leis ternis, infrastipularibus geminis rectis, infrafoliaceo re-
vo, petiolo aculeato, pinnis 2-3-jugis, foliolis 3-5-jugis
ique oblongis obtusissimis, spicis axillaribus laxis folio
vioribus, calyce dimidio corollæ longiore, legumine late
ongo-lineari tenuissimo membranaceo glabro indehiscente.
ls near Gedda, in Arabia, *S. Fischer*, n. 72.—I have also
pecimen amongst Tweedie's Patagonian plants, but pro-
ly from some garden at Buenos Ayres.

he *A. Senegal* (Willd. Spec. iv. 1077), excluding some of
synonyms; and *A. Asak* (Willd. l. c.), are evidently
r *A. hamulosa* and *A. Verek*, and perhaps identical with
one or the other, but the descriptions are too imperfect
determine them, and them is evident that several plants
e been confounded together under *A. Senegal*.

84. *A. Verek* (Guillem. et Perrot. Fl. Seneg. i. 245. t. 56),
nis glabris cinerascentibus, aculeis subternis infra-
ularibus geminis subincurvis, infrafoliaceo recurvo, petiolo
rmi pubescente, pinnis 3-5-jugis, foliolis 10-15-jugis
aribus obtusis subglaucis glabris v. subtus pilosulis,
cis axillaribus laxis folio duplo longioribus, calyce dimidio
ollæ sublongiore, legumine late lineare tenuissime mem-
naceo minute puberulo indehiscente.—Senegal, *Perrottet*,
delot, *Brunner*, n. 9.—In the Flora Senegambiæ, above
ted, will be found much valuable information respecting
and other Gum Acacias.

* * *Legumine subcoriaceo bivalvi.*

85. *A. Caffra* (Willd. Spec. iv. 1078), subglabra, ramulis
is, aculeis infrastipularibus geminis recurvis nullisve,
nis 8-12-jugis, petiolo inermi, foliolis 15-30-jugis lineari-
glabris v. subtus minute puberulis, calyce corolla parum
iore, legumine lineari plano bivalvi.—*A. fallax* E. Mey.
um. Pl. Af. Austr. 169.—Common in the western portion
the Cape Colony, from Uitenhage to Port Natal. This
cies, and the three following, are closely allied to each
er.

Namaquensis (Eckl. et Zeyh. Enum. Pl. Afr. Austr. 260),

foliis foliolisque minoribus magis confertis.—*A. Caffra*, E. Mey. l. c.—N. E. provinces of Cape Colony.

286. *A. Catechu* (Willd. Spec. iv. 1079), ramulis petiolisque pube brevi albidis, aculeis infrastipularibus geminis subrecurvis nullisve, pinnis 10-30-jugis, petiolo aculeato v. inermi, foliolis 30-50-jugis linearibus puberulis ciliatisque, spicis axillaribus laxiusculis folio brevioribus, floribus sessilibus pubescentibus, calyce corollâparum breviore, legumine lato lineari plano bivalvi.—*M. Patechu*, Linn. fil.—Roxb. Pl. Ind. ii. 563.—*M. Suma*, Roxb. l. c.—*A. polyacantha*, Willd. Spec. iv. 1079.—*A. Wallichiana*, DC. Prod. ii. 458.—Common in the E. Indian Peninsula, and Ceylon, also Mauritius, and the W. Indies, but evidently cultivated only in the latter station.

287. *A. catechuoides*, ramulis fuscescentibus petiolisque pubentibus v. demum glabris, aculeis infrastipularibus geminis recurvis v. nullis, pinnis 10-20-jugis, petiolo inermi, foliolis 20-40-jugis linearibus ciliato-hispidulis, calyce dimidio corollæ subbreviore, legumine lato-lineare plano bivalvi.—*M. catechuoides* Roxb. Pl. Corom. ii. t. 175.—E. Indian Peninsula, *Roxburgh*, *Carey*, *Wight*; Assam, *Jenkins*.

288. *A. Sundra* (DC. Prod. ii. 458,) glaberrima, ramis fusco-

2. *Ataxacanthæ.* Inflorescentia spicata. Aculei sparsi, nonnulli rarius infrastipulares. Spicæ supremæ sæpius racemosæ.—Species 2: priores Africanæ, cæteræ Americanæ.

289. *A. ataxacantha* (DC. Prod. ii. 459), ramis petiolisque uberulis demum glabratis, aculeis sparsis recurvis, stipulis embranaceis semicordatis acuminatis, pinnis 8-15-jugis, liolis 20-30-jugis falcato-linearibus ciliatis glabris, spicis longatis laxis supremis racemosis, floribus subsessilibus labris, calyce corolla dimidio breviore, legumine lato-lineare lano chartaceo glabro bivalvi.—Senegambia, *Leprieur and errottet, Heudelot* n. 536.

290. *A. macrostachya* (*Reichenb.* in Sieb. Pl. Seneg. exs. . 44), aculeis sparsis recurvis, ramulis petiolisque ferrugineo-illosis, stipulis membranaceis late dimidiato-cordatis villosis, innis 20-25-jugis, foliolis 20-40-jugis oblique linearibus trinque adpresse pilosis ciliatis, spicis elongatis laxis su-remis racemosis, floribus sessilibus glabriusculis, calyce orolla triplo breviore.—Aculei validi. Stipulæ 3 lin. longæ, ito deciduæ. Spicæ 3-3½ pollicares. Ovarium villosum.—enegal, *Sieber*.

291. *A. grandistipula* (sp. n.), ramulis petiolisque glabris parse recurvo-aculeatis, stipulis maximis oblique reniformi-ordatis, pinnis 3-6-jugis, foliolis 10-25 jugis falcato-oblongis nceolatisve obtusis glabriusculis ciliatis, spicis ovato-blongis densis paniculatis, floribus breviter pedicellatis labris, calyce corolla dimidio breviore, legumine amplo to-lineare glabro plano, valvis chartaceis.—Spicæ circa 9 lin. ngæ, pedunculo spicæ æquilongo. Bracteolæ lineari-spa-ulatæ, pedicello subæquilongæ. Pedicelli ½ lin.. calyx 1 n., corolla 2 lin. longa. Stamina numerosa, corolla duplo ngiora. Ovarium villosum.—Brazil, *Sello*; Organ Moun-ins, *Gardner* n. 361.

292. *A. lacerans* (sp. n.), ramis petiolisque sparse recurvo-culeatissimis puberulis demum glabratis, pinnis 20-25-igis, foliolis 40-70-jugis anguste linearibus rigidulis glabris ubciliatis, spicis elongatis laxis paniculatis, floribus sessilibus

minute puberulis, calyce corolla vix dimidio breviore.—Glandula petiolaris magna verrucæformis, jugales minimæ ad pinnarum nec non foliolorum paria suprema. Foliola 1½-2 lin. longa, tenuissima. Spicæ bipollicares. Bracteolæ setaceæ. Corolla fere 2 lin. longa.—Brazil, *Sello.*

293. *A. Bonariensis* (Gill. in Hook. Bot. Misc. iii. 207), aculeis sparsis recurvis, ramulis petiolisque albicantibus glabris v. minutissime tomentellis, stipulis setaceis deciduis, pinnis 6-12-jugis, foliolis 20-25-jugis oblique linearibus glabris, spicis breviter cylindraceis paniculato-racemosis, floribus sessilibus velutinis, calyce corolla parum breviore, legumine lato-lineare plano glabro, valvulis coriaceo-chartaceis.—Buenos Ayres and S. Brazil, *Gillies, Tweedie, Sello, &c.*

294. *A. velutina* (DC. Prod. ii. 459,) ramulis petiolisque junioribus velutino-pubescentibus demum glabriusculis, aculeis infrastipularibus sparsisque recurvis, stipulis hinc inde elongatis lineari-spathulatis membranaceis deciduis, pinnis 7-11-jugis, foliolis 20-40-jugis linearibus membranaceis demum glabratis, spicis cylindricis densis fasciculato-racemosis, floribus sessilibus pubescentibus, calyce corolla parum breviore.—Ovarium substipitatum, villosum.—Brazil, *Pohl;* Utinga, in the province of Bahia, *Blanchet* n. 2772.

The *A. dumetorum DC.*, *A. monacantha Willd.*, *A. Spini Balb.* (DC. Prod. ii. 459, 460,) and *A. hostilis, Mart. Reise,* if they are true *Acaciæ*, would belong to this section; but they are not sufficiently described to determine the genus.

§ 3. *Nudifloræ.* Inermes. Inflorescentia spicata. Species omnes Americanæ.

Single branches of spiniferous or aculeate species occur sometimes without thorns or prickles; but it is very rare that a good specimen, with young shoots, is so entirely without, as to be confounded with the *Nudifloræ*, or truly unarmed species.

295. *A. scleroxyla* (Tuss. Fl. Ant. t. 21,) ramulis petiolisque tomentellis, stipulis obsoletis setaceisve, pinnis 10-15-jugis, foliolis 30-70-jugis linearibus obtusis glabris, spicis axilla-

elongatis folio brevioribus, floribus sessilibus puberulis,
mine sessile lato-lineare plano glabro, valvulis coriaceis.—
tate sæpe nigrescit.—Hayti, *Ehrenberg*.

6. *A. nudiflora* (Willd. Spec. iv. 1058,) ramulis petio-
e junioribus velutino-tomentosis demum glabris, pinnis
ugis, foliolis 10-16-jugis ovato-ellipticis oblongisve
sissinis retusisve coriaceis supra nitidis subtus pallidis
ribus puberulis, spicis elongatis axillaribus folio sub-
ioribus, floribus sessilibus pubescentibus, legumine lato-
re recto plano glabro, valvulis crasso-coriaceis.—Siccitate
escit. Ramuli juniores flavicant. Glandulæ convexius-
, jugales ad omnia paria pinnarum. Foliola adulta 5-6-
longa, circa 3-lin. lata, sæpe fere trapezoidea. Spicæ
poll. longæ. Ovarium glabrum.—*A. Rohriana*, DC.
l. ii. 457.—West Indies, v. *Rohr*; St. Thomas's, *Balbis*,
enberg.—I have little doubt but that *A. muricata*, *Willd.*
is also the same species.

7. *A. Acatlensis* (sp. n.), ramulis petiolisque junioribus
entellis demum glabris, stipulis setaceis rigidis, pinnis
-jugis, foliolis multijugis linearibus obtusis glabriusculis,
is axillaribus elongatis fasciculatis subracemosisque,
bus sessilibus puberulis, ovario glabro. — Stipulæ sub-
gentes, deciduæ. Stamina ultra 50, libera.—Acatlan, in
ico, *Andrieux* n. 396.

he *A. arenosa*, *rostrata*, *pulcherrima*, and *macroloba* of
ldenow, if true *Acaciæ*, which is doubtful, would belong
his section.

Concinnæ. Inflorescentia capitata, globosa, paniculata.
egumen compressum, crasso-carnosum, inter semina
thmis indehiscentibus transverse septatum, inter isthmos
l utramque suturam dehiscens.—Species omnes Asiaticæ,
andentes, aculeis sparsis. Flores sessiles, calyce corolla
arum breviore. Ovarium stipitatum.

he remarkable pod in this section would justify the
blishing it as a distinct genus, were it not that the habit
flowers are so precisely those of the Asiatic *Pennatæ*,

that they cannot be recognized as a distinct group, unless the specimens are in fruit.

298. *A. rugata* (Ham. in Wall. Cat. n. 5251), aculeis numerosis recurvis, ramulis petiolisque tomentosis demum glabratis, stipulis cordatis ?, pinnis 4-6-jugis, glandulis verrucæformibus, foliolis 12-18-jugis dimidiato-oblongis obtusis utrinque glabris, floribus puberulis, ovario villoso.—*A. concinnæ* simillima videtur, at ovarium constanter villosum.—E. Indies, *Hamilton*.

✓ 299. *A. concinna* (DC. Prod. ii. 464), aculeis numerosis recurvis, ramulis petiolisque tomentellis demum glabris, stipulis cordatis membranaceis, pinnis 4-6-jugis, glandulis verrucæformibus, foliolis 12-18-jugis dimidiato-oblongis obtusis glabris v. subtus puberulis, floribus puberulis glabratisve, ovario glabro. Foliola pallide virentia, uti pinnæ inter se distantia, semipollicaria, tenuia, $1\frac{1}{2}$-lin. lata. Racemi parum ramosi. Pedunculi pollicares. Capitula parva. Legumen 3-5-poll. longum, pollicem latum.—East Indies.—For the synonyms of this species, see Wight et Arn. Prod. i. 277.

✓ 300. *A. oxyphylla* (Grah. in Wall. Cat. n. 5252), aculeis recurvis, ramulis petiolisque minute tomentellis glabrisque, stipulis anguste lanceolatis, pinnis 6-8-jugis, glandulis elevatis scutellæformibus, foliolis 15-20-jugis dimidiato-oblongis falcatis acutis glabris supra nitidis, floribus glabriusculis, ovario glabro.—Affinis *A. concinnæ*, sed distincta videtur. Panicula ampla.—Silhet, *Wallich*.

✓ 301. *A. polycephala* (DC. Prod. ii. 473), aculeis numerosis subrecurvis ramulis petiolisque tomentosis, stipulis cordatis membranaceis, pinnis 6-8-jugis, glandulis elevato-verrucæformibus, foliolis 20-30-jugis oblique linearibus glabris v. subtus appresse puberulis, floribus ovarioque glabris.—Foliola ut in *A. pennata* angusta et approximata, sed majora (3 lin. longa) et magis reticulata. Ovarium *A. concinnæ*. Legumen non vidi.—Mauritius, *Sieber* n. 252; E. Indian Peninsula? *Heyne*, (Wallich, Cat. n. 5250, D.)

✓ 302. *A. Philippinarum* (sp. n.), aculeis parvis rectiusculis, ramulis petiolisque tomentosis demum glabratis, stipulis parvis lanceolatis, pinnis 10-12-jugis, glandulis elevato-verrucæformibus, foliolis 20-30 jugis oblique oblongo-linearibus glabris v. subtus vix pilosulis, floribus subglabris, ovario glabro. — *A. polycephalæ* valde affinis; stipulis diversa; pinnæ numerosiores; foliola paullo latiora; capitula minora, numerosa. Legumen 4-5 poll. longum, 7-8 lin. latum, structura et forma *A. concinnæ* simile.—Philippine Islands, *Cuming* n. 953 and 1166.

§ 5. *Pennatæ.* Inflorescentia capitata, globosa v. ovoidea, paniculata. Legumen lato-lineare planum, coriaceum v. chartaceum, intus continuum, bivalvatim dehiscens v. rarius tenuius indehiscens. Frutices scandentes v. rarius arbusculi divaricato-ramosi. Aculei sparsi v. nulli. Flores sessiles v. in unica specie (*A. pedicellata*) pedicellati. Capitula parva numerosa; panicula nuda v. basi foliata, v. pedunculi rarissime plerique axillares.

* *Asiaticæ, v. Africanæ.*

303. *A. Intsia* (Willd. Spec. iv. 1091), scandens, aculeis sparsis recurvis numerosis, ramulis petiolisque tomentellis demum glabratis, pinnis 4-8-jugis, glandulis elevatis, foliolis 8-20-jugis oblique oblongis obtusis glabris supra nitidis, capitulis globosis paniculatis, calyce corolla parum breviore, ovario oblongo villoso, legumine subfalcato glabro.—Glandulæ in hac et affinibus petiolaris majuscula, jugales ad paria pinnarum 1-6 superiora parvæ, ad paria foliolorum superiora minimæ.—E. Indies. *Roxburgh*, *Wallich*, (*Cat.* n. 5248); Sumatra, *Marsden*; Philippine Islands, *Cuming* n. 1499.

304. *A. Kraussiana* (Meisn. Pl. Krauss. ined.), scandens, aculeis sparsis minimis, ramulis petiolisque puberulis glabratisque, pinnis 3-4-jugis, glandulis elevatis, foliolis 6-12-jugis oblique oblongis obtusis glabris supra subnitidis capitulis globosis racemoso-paniculatis, calyce dimidio corollæ vix longiore, ovario longe stipitato brevi villoso, legumine recto glabro.—*A. Intsiæ* valde affinis, at distincta videtur.—Port Natal, *Krauss* n. 198. *Peddie.*

305. *A. cæsia* (Wight. et Arn. Prod. i. 278), scandens,

aculeis sparsis recurvis numerosis, ramulis petiolisque tomentosis demum glabratis, pinnis 8-15-jugis, glandulis scutellæformibus, foliolis 15-40-jugis oblongo-linearibus falcatis acutiusculis supra nitidis subtus pallidis puberulis glabratisve, capitulis globosis paniculatis, calyce corolla parum breviore, ovario oblongo villoso, legumine subfalcato glabro.—*A. Intsioides* DC. Prod. ii. 278?—*A. Arar*, Ham. in Wall. Cat. n. 5259.—*A. alliacea*, Ham. in Wall. Cat. n. 5258.—An forte mera varietas *A. Intsiæ*, pinnis numerosis, foliolis angustis?—East India, (chiefly northern India), *Heyne, Hamilton, Jacquemont*; Assam, *Jenkins*.

306. *A. pennata* (Willd. Spec. iv. 1090), scandens, aculeis sparsis numerosis rectis v. demum recurvis, ramulis petiolisque tomentosis demum glabratis, pinnis 8-20-jugis, foliolis ultra 30-jugis anguste linearibus glabris v. junioribus subtus sericeis, capitulis globosis paniculatis, calyce corolla parum breviore, ovario stipitato villoso, legumine glabro v. tomento minuto rufescente.—*M. torta*, Roxb. Fl. Ind. ii. 566.—*M. ferruginea*, Rottl. in Spr. Syst. ii. 207.—*A. arrophila*, Don, Prod. Fl. Nep. 247.—*A. megaladena*, Desv. Journ. Bot. 1814, t. 69.—*A. prensans* Lowe, Bot. Mag. t. 3408.—Stipulæ foliorum floralium sæpius lanceolato-cordatæ, acuminatæ, membranaceæ, deciduæ. Glandula petiolaris majuscula.—Common in E. India, from the Peninsula to the Burmese territory, *Roxburgh, Jacquemont, &c., Wall. Cat.* n. 5254, A to D, G and perhaps F, and 5257; Ceylon, *Berlin Herbarium*; Assam, *Jenkins*.

β. *Dregeana*, glandulis multo minoribus.—S. Africa, *Drege*.

γ. *Heyneana*, ovario longiore brevius stipitato minus villoso. —*A. cæsia*, Wall. Cat. n. 5253, A. non Willd. *A. canescens*, Grah. in Wall. l. c. n. 5256.—E. India.

307. *A. pluricapitata* (Steud. Nom. Bot. ed. 2. 7), scandens, aculeis sparsis numerosis parvis caulinis rectis petiolaribus recurvis, ramulis petiolisque tomentosis, glandulis parvis elevatis, pinnis 20-25-jugis, foliolis ultra-30-jugis parvis anguste linearibus glabris v. subtus sericeis, capitulis

osis parvis paniculatis, calyce corolla parum breviore,
rio stipitato villoso.—*A. polycephala*, Grah. in Wall.
. n. 5255, non DC.—A præcedente differt præcipue
nis numerosis brevibus et glandulis.—Penang, *G. Porter*,
layson, *Phillips*.

* * *Americanæ.*

08. *A. tamarindifolia* (Willd. Spec. iv. 1092), scandens,
ra, aculeis sparsis subrecurvis, ramis tetragonis, stipulis
lis late cordatis membranaceis, pinnis 4-8-jugis, glandulis
tellæformibus, jugalibus paucis, foliolis 10-20-jugis
ique oblongis obtusis, capitulis globosis paniculatis,
ibus brevissime pedicellatis glabris, calyce corolla sub-
idio breviore, ovario longe stipitato villoso, legumine gla-
.—Jacq. Hort. Schœnbr. t. 396.—West Indies: Martinica,
ber, n. 174; St. Lucia, *Anderson;* St. Vincent's, *Guil-*
g.

09. *A. scandens* (Willd. Enum. 1037), scandens, aculeis
nerosis parvis recurvis, ramis petiolisque tomentoso-
escentibus v. rufo-villosis, pinnis 10-20-jugis, glandulis
vis sessilibus numerosis, foliolis 30-50-jugis parvi-
aribus obtusis ciliolatis glabris, capitulis ovoideis subob-
gisve laxiusculis paucifloris paniculatis, calyce puberulo
olla parum breviore, ovario stipitato villoso, legumine
ngato basi angustato brevissime rufo-tomentoso.—*Mimosa*
minensis, Vell. Fl. Flum. xi. t. 38 ?—*A. plumosa*, Lowe in
t. Mag. t. 3366.—Pinnæ sesquipollicares. Foliola con-
a, 1½-2 lin. longa. Legumen 4-5 poll. longum, 6-7 lin.
m v. interdum latius.—Rio Janeiro, *Lhotsky;* Villa Nova,
rtius; Brazil, *Pohl. Langsdorff.*

. *axa*, ramulis subalbidis, foliis pauci-glandulosis, floribus
escentibus.—Brasil, *Sello*.

10. *A. adhærens*, repens v. scandens, aculeis numerosis
rsis recurvis parvis, ramis petiolisque villosis, pinnis
20-jugis, glandulis elevato-turbinatis substipitatis, foliolis
60-jugis linearibus obtusis rigidulis glabris ciliatisve,
itulis parvis globosis in panicula ampla numerosissimis,
ibus sessilibus glabris villosulisve, calyce corolla parum

breviore, ovario breviter stipitato villoso.—*Mimosa adhærens*, Mart. Herb. Fl. Bras. 122.—Brazil, *Pohl. Langsdorff*; Serra d'Estrella, *Martius* Herb. Bras. n. 174; Organ Mountains, *Gardner* n. 350.

311. *A. grandisiliqua*, repens v. scandens, aculeis numerosis parvis recurvis sparsis, ramulis tereti-striatis petiolisque hispidulis subtomentosis, pinnis 10-25-jugis, glandulis elevato-turbinatis substipitatis numerosis, foliolis 40-60-jugis linearibus obtusis rigidulis glabris, capitulis parvis globosis in panicula ampla numerosissimis, floribus sessilibus glabriusculis, calyce corolla parum breviore, ovario stipitato villoso, legumine brevissime stipitato basi rotundato latissimo plano pube tenui rufo.—*Mimosa grandisiliqua*, Vell. Fl. Flum. xi. t. 37.—Minus tomentosa quam *A. adhærens*, capitula numerosiora minora, et ovario facile distincta. Legumen maturum 4-5-poll. longum, 1½ poll. latum.—Brasil, *Martius, Herb. Bras. n.* 1098, and 1104; Bahia, *Lushnath*.—The latter specimen is referred; by Walpers, to Willdenow's *A. paniculata*; but differs essentially from Willdenow's description, in the form of the glands, besides that his plant came from a very different part of the country, and the *Acacias* of this group, with the exception of one or two common ones, appear very local in their stations.

312. *A. Clausseni* (sp. n.), subscandens, aculeis sparsis v. infrastipularibus recurvis raris, caule tereti-striato petiolisque breviter tomentosis, pinnis 10-20-jugis, glandulis depressis parvis, foliolis 30-60-jugis parvis linearibus obtusis ciliolatis glabris nitidis, capitulis parvis globosis in panicula ampla numerosissimis, floribus sessilibus tomentellis, calyce corolla parum breviore, ovario stipitato villoso, legumine latissimo plano glabriusculo v. tenuissime rufo-puberulo.—Affinis *A. grandisiliquæ*.—Aculei multo rariores. Glandulæ paucæ nequaquam stipitatæ. Habitus multo glabrior.—Brasil: Rio St. Francisco, *Claussen*, *Sello*, *Gardner* n. 1821; near Crato, *Gardner* n. 1941.

313. *A. micradenia* (sp. n.), scandens? aculeis parvis incurvis raris sparsis, caule tereti-striato petiolisque brevis-

entosis, pinnis 10-15-jugis, glandulis elevato-tur-
ylindricisve minimis, foliolis 30-50-jugis minimis
ciliolatis glabris nitidis, legumine stipitato lineare
be tenui rufo.—Foliola multo minora quam in *A.*
ua, et legumen vix 7-8 lin. latum.—Brazil, *Pohl.*

. *Martii* (sp. n.), subglabra, aculeis sparsis raris
caule tereti-striato, pinnis 15-20-jugis, glandula
maxima verrucæformi jugalibus scutellæformibus,
ultijugis linearibus ciliolatis glabris nitidis, capitulis
parvis paniculatis, floribus puberulis glabratisve,
rolla parum breviore, ovario subsessile villoso.—
. *Clausseni*, glabritie aculeis et glandulis diversa.
non vidi. An forte *A. paniculatæ* var?—Brazil,
Herb. Bras. n. 1106.

. *paniculata* (Willd. Spec. iv. 1074). I have not
species, which Willdenow had from Parà. It must
. *Martii*, but with shorter pinnæ, and more pubes-
possess an imperfect specimen from St. Lucia, in
ndies, answering pretty well to Wildenow's descrip-
too incomplete to afford any further information.

. *Serra* (sp. n.), scandens, aculeis in ramorum
eberrimis confluentibus recurvis, in petiolis pedun-
sparsis, pinnis circa 26-jugis, glandula petiolari
longa, foliolis 50-80-jugis falcato-linearibus supra
itidis subtus petiolisque puberulis, capitulis mul-
lobosis paniculatis, floribus glabriusculis, calyce
midio breviore, ovario longe stipitato villoso.—Rami
. Aculei cartilaginei, compressi, confluentes, alas
acerantes. Folium unicum vidi fere pedale, foliolis
ngis. Capitula (absque staminibus), fere 5 lin.
—Brasil, *Sello.*

. *recurva* (sp. n.), glabra, aculeis recurvis sparsis,
angulato, pinnis 15-20-jugis, glandulis majusculis
rmibus, foliolis multijugis linearibus glabris nitidis,
globosis parvis paniculatis, floribus sessilibus glabris,
rolla dimidio breviore, ovario stipitato glabro.

Organ Mountains, *Gardner*, n. 359.—Readily distinguished from *A. Martii*, by its smooth ovarium.

318. *A. tubulifera* (sp. n.), subscandens? aculeis recurvis sparsis raris, ramulis petiolisque leviter tomentellis pinnis 6-9-jugis, glandulis depressis, foliolis 30-50-jugis linearibus glabris subciliatis, capitulis globosis subpaniculatis, floribus sessilibus glabriusculis, calyce corolla tubulosa quadruplo breviore, ovario stipitato villoso. Folia laxa; viridia, glandula petiolaris majuscula, oblonga, jugales 5-6. Foliola pleraque 2 lin. longa. Corollæ forma ab affinibus distincta, anguste tubulosa, 2¼ lin. longa. Stamina ut in affinibus disco carnoso externe pluriseriatim inserta.—Peru, *Matthews* n. 1568.

319. *A. Westiana* (DC. Prod. ii. 464), arborea v. scandens? aculeis recurvis sparsis, ramulis petiolisque glabris v. leviter tomentellis, pinnis 6-12-jugis, glandulis scutellæformi-depressis, foliolis 15-30-jugis oblongo-linearibus glabris pilosulisve, capitulis globosis paniculatis, floribus sessilibus glabris v. minute tomentellis, calyce dimidio corollæ breviore, ovario stipitato villosulo, legumine pulveraceo-puberulo demum glabrescente glauco.—Foliola quam in præcedentibus latiora, angustiora quam in sequentibus.—W. Indies; St. Thomas, *Ehrenberg*; Guiana, *Schomburgk*, n. 852; Ceara, *Gardner*. It is possible that some of the following varieties, when better known, may prove to be distinct species.

β. legumine longiore, panicula minus ramosa.—Crato, *Gardner*.

γ. glandulis minimis,—Antigua, *Nicholson*.

δ. glandulis majoribus.—Brasil, *Sello*.

320. *A. polyphylla* (DC. Prod. ii. 469), inermis v. aculeis parvis raris subincurvis armata, ramulis subtetragonis petiolisque glaucescenti-tomentellis glabratisve, pinnis 12-20-jugis, glandulis parvis, foliolis 30-50-jugis falcato-oblongis acutiusculis supra glabris nitidis subtus minutissime puberulis nervo submarginali, capitulis paucifloris ample glomerato-paniculatis, calyce puberulo corolla cano-pubescente dimidio

re, ovario longe stipitato villoso, legumine lato-lineare
.—*A. riparia*, Bert. in Spr. Syst. iii. non Kunth.—
lula petiolaris vix oblonga, jugales 1-3 v. nullæ. Foliola
in. longa. Panicula sesquipedalis, capitulis numerosis
ssilibus.—Brasil, *Sello*; Sta. Martha, *Bertero*; Cujaba
Herb. Bras. n. 1110.

. *A. glomerosa* (sp. n.), arborea, inermis v. aculeis
subincurvis armata, ramulis petiolisque tomentellis
tisve, pinnis 6-8-jugis, glandulis scutellæformibus,
s 12-25-jugis oblique lato-oblongis obtusissimis supra
s nitidis v. junioribus puberulis subtus tomentellis
erviis, capitulis paucifloris ample glomerato-paniculatis,
puberulo corolla cano-pubescente dimidio breviore,
longe stipitato villoso, legumine lato-lineare glabro.—
s *A. polyphyllæ*; pinnæ et foliola pauciora, foliola
, semipollicem longa. Glandulæ majores, jugales 1-2.
men sæpe semipedale, $1\frac{1}{4}$ poll. latum.—Brazil; Rio
ro, *Guillemin*, n. 809; Piauhy, *Gardner* n. 1940;
. Francisco, *Claussen.*

. *A. striata* (Humb. et Bonpl. in Willd. Spec. iv. 1089),
dently allied to several of the preceding species, but
escription is insufficient to determine whether it be or
lentical with any one of them.

. *A. pteridifolia* (sp. n.), scandens, subglabra, aculeis
raris, pinnis 2-3-jugis, glandula petiolare depressa, juga-
subnullis, foliolis 20-30-jugis lato-linearibus oblongisve
obliquis falcatis glabris, capitulis ovoideis, pedunculis pa-
tis axillaribus racemosisve, floribus sessilibus minute pu-
s, calyce corolla subdimidio breviore, ovario longe
ato villoso. Foliola 6-8 lin. longa. Capitula 5-6 lin.
, (staminibus neglectis).—Rio Janeiro, *Sello*, *Lhotsky*,
.

. *A. Langsdorffii* (sp. n.), inermis? ramis petiolis in-
centiaque canescenti-tomentosis, pinnis 4-7-jugis,
ulis scutellæformi-depressis, foliolis 20-30-jugis
gis obtusis supra opacis glabris v. tomentellis, subtus
centi-tomentosis, paniculis axillaribus terminalibusque,

capitulis parvis dense multifloris tomentellis, calyce dimidio corollæ longiore, ovario stipitato villoso.—Foliola rigidula 2-3 lin. longa 1·1½ lin. lata. Capitula incano-tomentosa, staminibus neglectis vix. 2½ lin. diametro.—Serra da Lapa, Brasil, *Langsdorff*.

✓ 325. *A. Berlandieri* (sp. n.), inermis, ramis petiolis inflorescentiaque cano-tomentosis, pinnis 10-12-jugis, glandulis depressis, foliolis 30-50-jugis linearibus obtusis supra opacis glabris v. tomentellis subtus pubescentibus subcanescentibus, panicula terminale incana, capitulis parvulis dense multifloris cano-pubescentibus, calyce corolla parum breviore.—Habitu *A. Langsdorffii* affinis. Foliola vix 2 lin. longa. Flores in specimine omnes masculi videntur. Petala basi libera, medio connata. Stamina numerosa.—Monterey, Texas, [illegible] *Berlandier*.

326. *A. ambigua* (Vog. Linnæa, x. 600), inermis, ramulis petiolisque junioribus puberulis demum glabris, pinnis 6-jugis, glandulis scutellæformibus, foliolis 8-15-jugis oblique ovali-oblongis obtusis glabris, capitulis parvis numerosis ample paniculatis tomentosis, calyce corolla parum breviore, ovario brevissime stipitato glabro, legumine longe stipitato lato-lineare glabro nitido.—Foliola pallide virentia subsemipollicaria. Glandula petiolaris orbiculata, jugalis subsimilis ad par supremum pinnarum. Legumen nondum maturum 5 poll. longum, 9 lin latum.—Haiti, *Ehrenberg*.

✓ 327. *A. pedicellata* (sp. n.), scandens ? aculeis sparsis raris, ramulis glabratis, pinnis 4-6-jugis, glandulis parvis orbiculatis, foliolis 6-10-jugis obovali-oblongis utrinque viridibus petiolisque pubescentibus, capitulis globosis, pedunculis axillaribus paniculatisque, floribus pedicellatis puberulis, calyce laxo corolla parum breviore, ovario subsessili glabro.—Inflorescentia et flores fere *Filicinarum*, stamina tamen minus numerosa, (vix 50); rami hinc inde aculeati et petioli glanduliferi ut in *Vulgaribus*. Stipellæ adsunt setaceæ. Folia in specimine florido nondum perfecte evoluta, foliola jam 3 lin. longa.—Brasil, *Pohl*.

328. *A. Miersii* (sp. n.), inermis, subscandens, glabra v.

lorescentia puberula, pinnis unijugis, petiolo glandulifero, olis unijugis amplis oblique ovali-oblongis acuminatis iaceis, panicula ampla, capitulis globosis puberulis, ovario viter stipitato glabro.—Species distinctissima, foliolis -pollicaribus. Stipulæ, et bracteæ setaceæ, rigidulæ. pitula et flores fere *A. polyphyllæ*.—Aqueduct of Rio neiro, *Miers*.

4. oligophylla (Hoffm. Verz. ex DC. Prod. ii. 471), if an *acia*, is probably very near *A. Miersii*, but with 3 to 4 pair leaflets.

29. *A. furcata* (Gill. in Hook. Bot. Misc. 3.206), fruticosa, bra vaculeis minimis sparsis raris et spinis axillaribus idis apice sæpius divaricato-bifidis armata, pinnis 2-4-is, glandula ad par ultimum minuta, foliolis 6-10-jugis ongis linearibusve, capitulis globosis longe pedunculatis viter racemosis, floribus subsessilibus, legumine lato-lineare oblongo glaucescente glabro, valvulis membranaceis.—ecies distinctissima, habitu *Gummiferis* affinis. Stipulæ nen obsoletæ nec spinescentes, et adsunt aculei. Spinæ llares sunt pedunculi steriles deformati, lobi divaricati pedicellis abortivis oriuntur.—Along the foot of the Andes Mendoza, *Gillies*, *Miers*.

SERIES VI.—FILICINÆ. *Inermes. Folia bipinnata, eglandu-a. Inflorescentia Vulgarium.*—Arbores parvæ v. frutices, ius herbæ, in Antillis v. circa mare Mexicanum et in nerica septentrionali crescentes. Foliorum pinnæ bisti-llatæ. Capitula globosa v. oblonga, axillaria v. paniculata, plerisque (an in omnibus ?) albida. Flores in capitulo dicellati. Stamina numerosissima, interdum ultra 300. gumen lineare v. oblongum, rectiusculum, planum, valvulis embranaceis dehiscens.—The species of this series are, rhaps, too much multiplied, but my specimens are as yet ry imperfect of several of them, and there are many that have not seen at all.

330. *A. villosa* (Willd. Spec. iv. 1067), ramulis petiolis dunculisque villosis, pinnis 5-8-jugis, foliolis 12-20-jugis

oblongis obtusiusculis supra glabris v. minute puberulis, subtus adpresse pilosis, capitulis ovoideo-oblongis, pedunculis axillaribus folio pluries brevioribus, floribus breviter pedicellatis glabris, legumine villoso.—Foliola 3-4 lin. longa, crassiuscula, inferiora cujusve pinnæ minora. Pedunculi solitarii v. gemini vix unquam pollicares. Capitulum ante anthesin oblongum, per anthesin sæpius ovoideum v. subglobosum.—*A. lophanthoides*, DC. Prod. ii. 457.—*A. carbonaria*, Schlecht. Linnæa, xii. 571.—Jamaica, *Houstoun*, *Wright*, &c.; Vera Cruz, *Schiede*; Xalapa, *Galeotti*; Gulf of Honda, Central America, *Hinds*.

The Mimosa *arborea* Linn. according to the specimen in his herbarium, which answers to his description, is the same species, but many of the synonyms quoted by him, and the *Acacia arborea* of many modern authors, are referable to the *Albizzia Julibrissin*.

331. *A. umbellulifera* (Kunth Mim. 100. t. 31), appears to be very near to *A. villosa*, and *A. filicina*, but with longer pedicels than either, and intermediate between the two in respect of general inflorescence. *Humboldt* and *Bonpland* gathered it near the town of Mexico.—*A. stipellata*, Schlecht. Linnæa, xii. 574, from the same locality, is probably the same species.

332. *A. filicina* (Willd. Spec. iv. 1072), ramulis petiolis pedunculisque piloso-hirtis, pinnis 5-6-jugis, foliolis 40-60-jugis oblique linearibus acutiusculis glabris ciliolatis, capitulis globosis paucifloris paniculatis, floribus breviter pedicellatis glabris.—Pili patentes rariores quam in *A. villosa*. Foliola 2 lin. longa. Pedunculi fasciculati, sesquipollicares, inferiores axillares, superiores in paniculam aphyllam dispositi. Capitula vix 20-flora.—Said to be from Mexico; I have only seen cultivated specimens.

333. *A. hirsuta* (Schlecht. Linnæa xii. 572), ramulis petiolis pedunculisque molliter hirsutis, pinnis 11-15-jugis, foliolis 40-60-jugis oblique linearibus acutiusculis glabris ciliolatis, capitulis globosis paucifloris ample paniculatis, floribus breviter pedicellatis.—*A. filicina*, Cham. et Schl.

æa v. 594.—Pinnæ numerosiores quam in *A. filicina*;
a numerosiora angustiora et acutiora quam in *A. hirta*.
cula ampla aphylla.—Hacienda de la Llaguna, Mexico,
de.

4. *A. penicillifera* (Lag. Nov. Gen. et Sp. 16), only
n from that author's very imperfect diagnosis, may
bly be the same as *A. hirsuta*; if so, Lagasca's name
be preferred.

5. *A. Cumingii* (sp. n.), ramilis petiolisque subadpresse
scentibus glabrisve, pinnis 5-9-jugis v. supremis pauci-
, foliolis 20-25-jugis oblique oblongis obtusiusculis
a glabris subtus pilosulis, pedunculis fasciculatis sub-
culatis, capitulis subglobosis, floribus breviter pedicella-
labris, legumine glabriusculo.—Folia *A. villosæ* non
milia, sed multo glabriora. Et inflorescentia et flores
n speciei similes, capitula tamen fere globosa, circa
ora, et pedunculi sæpius subpaniculati.—Panama,
ing, n. 1242.

6. *A. glabrata* (Schlecht. Linnæa, xii. 569,) glabra v.
rne minute puberula, pinnis 8-20-jugis, foliolis 20-25-
oblique linearibus acutiusculis glabris vix ciliolatis,
nculis in racemis axillaribus et panicula terminale fasci-
is, capitulis globosis glabris, floribus breviter pedicel-
legumine glabro.—*A. filicina*, Benth. Pl. Hartw. 13,
Willd.—Species elegans *A. hirsutæ* affinis, sed imprimis
itie differt.—Mexico, *Tate*; San Andres, *Schiede*; San
pe, *Andrieux* n. 398; Zacatecas, *Hartweg* n. 73; also
ably the same as from Guatemala, *Skinner*.

7. *A. cuspidata* (Schlecht. Linnæa, xii. 573,) appears to
ng to this section in every respect, except that the
le is said to be *glandulosus*. It is unknown to me.

8. *A. hirta* (Nutt. in Torr. et Gr. Fl. N. Am. i. 404),
uticosa (v. herbacea ?), caule petiolis pedunculisque
iter et sparse hirsutis, pinnis 10-13-jugis, foliolis 20-30-
oblongo-linearibus obtusiusculis ciliolatis glabris pilosu-
, pedunculis axillaribus v. supremis vix racemosis,

capitulis globosis glabris.—Caules e basi perenni-lignosi erecti, 1-3-pedales.—Arkansas and Red River, *Nuttall;* Louisiana, *Hall;* Texas, *Drummond*, 3d. coll. n. 155 and 156.

339. *A. Texensis* (Torr. et Gr. Fl. N. Amer. i. 404), fruticosa, glabra, pinnis 4-6-jugis, foliolis 10-20-jugis oblongo-linearibus obtusis, pedunculis axillaribus fasciculatis, capitulis globosis glabris, legumine glabro.—Texas, *Drummond* 3d coll. n. 153.

340. *A. Hartwegi* (Benth. Pl. Hartw. 13), fruticosa, ramulis petiolisque pubescenti-villosis, pinnis 5-7-jugis, foliolis 12-15-jugis oblongo-linearibus obtusis reticulato-venosis, pedunculis omnibus axillaribus, capitulis globosis glabris, legumine villoso.—Habitus *A. Texensis.* Foliola rigidiora, evidentius venosa. Flores sæpius tetrameri, occurrunt tamen nonnulli ut in affinibus pentameri.—Aguas Calientes, Mexico, *Hartweg*, n. 74.

Amongst the remaining *Acaciæ* enumerated in De Candolle's Prodromus, and in subsequent publications, the following have been already quoted under the genera previously described, or should be referred to the undermentioned genera:—

To ENTADA: *A. caudata*, DC.?

To PIPTADENIA: *A. Thibaudiana*, DC.; *Guianensis*, Willd.; *psilostachya*, DC.; *aspidioides*, Mey, *subtilifolia*, Humb. et Kunth; *viridiflora*, Kunth; *curvifolia*, Bonpl. Malm.; *esculenta*, DC.; *peregrina*, Willd.; *grata*, Willd.? *Niopo*, Humb. et Kunth; *microphylla*, Willd.?

To ELEPHANTORRHIZA: *A. elephantorrhiza*, Burch.

To PROSOPIS: *A. strombilifera*, Willd.; *salinarum*, DC.

To DICHROSTACHYS: *A. Dalea*, Desv.; *spinosa*, E. Mey.

To MIMOSA: *A. prosopoides*, DC.; *acanthocarpa*, Willd.; *revoluta*, Kunth; *Domingensis*, Bert.; *acantholoba*, Humb. et Bonpl.; *centrophylla*, DC.? *Guilandinæ*, DC.? *bimucronata*, DC.?

To LEUCÆNA: *A. trichodes*, Willd. and *pseudotrichodes*, DC.; *A. biceps*, *glauca*, and *frondosa*, Willd., and *leucocephala*,

:; *A. pulverulenta*, Schlecht.; *A. diversifolia*, Schlecht., *richandra*, Zucc.; *A. insularum*, Guillem.; (*Leucæna teri*, mihi.)

) ALBIZZIA (Durazzini): *A. Lebbek*, Willd.; *procera*, d.; *odoratissima*, Willd.; *Lebbekioides*, DC.; *speciosa*, d.; *amara*, Willd.; *Nemu*, Willd.; *Julibrissin*, Willd.; *is*, Wall.; *stipulata*, DC.; *elata*, Grah.; *myriophylla*, .; *Wightiana*, Grah.; *Smithiana*, Wall.; *marginata*, .; *Isembergiana*, Schimp.; *lophantha*, Willd.; *cyclosper-* DC.? *fulgens*, Labill.; *granulosa*, Labill.

) CALLIANDRA: *A. Magdalenæ*, Bert.; *hæmatomma*, .; *formosa*, Kunth.; *laxa*, Willd.; *ungulata*, Desv.; *oricensis*, Willd.; *alba*, Colla; *Caraccasana*, Willd.; *bertiana*, Don; *tetragona*, Willd.; *quadrangularis*, Link; *nioides*, Nees? *Callistemon*, Schlecht.; *metrosideriflora*, echt.; *humilis*, Schlecht.? *vespertina*, Mac Fad.

e following must be excluded from *Acacia*, as being ndrous; but are not sufficiently known to me to deter- the genera:— *A. fasciculata*, Kunth; *distachya*, DC.; *ta*, Willd.; *caduca*, Humb. et Bonpl.; *arenosa*, Willd.

e following are monadelphous, and will be mentioned after: *A. Acapulcensis*, Kunth; *desmostachya*, Benth; *ifolia*, Willd.; *multiflora*, Humb. et Kunth? *contorta*, ? *Guachapella*, Humb. et Kunth? *vaga*, Willd.; *divari-* , Willd.; *arborea*, Benth. Pl. Hartw. non Willd.

the following the stamens are not described, and I am le to form any idea of their genus:—*A. rostrata*, ld.; *macroloba*, Willd.; *pulcherrima*, Willd.; *dumetorum*, Hil.; *Jupunba*, Willd.; *nitida*, Willd.; *tenuiflora*, Willd.; *mifera*, Schlecht.; *pubescens*, Schlecht.; *platyacantha*, lecht.; *aurita*, Schlecht.; *adstringens*, Mart.; *inundata*, t.; *stenostachya*, Desv.; *Hamiltonii*, Desv.; *linearis*, v.; *micracantha*, Desv.; *sclerocarpa*, Desv.; *hirta*, Boj.; *ns*, Boj.

astly, the long list of species which follows, consists of ts described without either flowers or fruit having been , and which therefore ought now perhaps to be passed

over entirely as undeterminable: *A. pilosa*, Bert.; *cassioides*, Willd.; *diptera*, Willd.; *Spini*, Balb.; *Asak*, Willd.; *sarmentosa*, Desv.; *lycopodioides*, Desv.; *pectinata*, Humb. et Kunth; *venusta*, Willd.; *Hoffmanseggii*, DC.; *Javanica*, DC.; *Hadiensis*, DC.; *cineraria*, Willd.; *prismatica*, Hoffmsg.; *leptophylla*, DC.; *virescens*, DC.; *lentiscifolia*, Desf.; *patula*, Humb. et Bonpl.; *Peruviana*, Humb. et Bonpl.; *Guayaquilensis*, Desf.; *brachyacantha*, Humb. et Bonpl.; *ciliata*, Humb. et Bonpl.; *acicularis*, Humb. et Bonpl.; *rhodacantha*, Desf.

There are likewise numerous names to be met with in nurserymen's catalogues, many of which have been entered into Steudel's Nomenclator; but as they are unpublished, and doubtless are all mere synonyms of described species, there would be no use in making any further mention of them.

(*To be continued.*)

Contributions towards a FLORA OF BRAZIL, *by* GEORGE GARDNER, F.L.S. *Professor of Botany and Natural History in the Andersonian University, Glasgow.*

Capparis *lineata, Domb.—Pers. Syn.* 2, *p.* 60. *D.C. odr.* 1, *p.* 252. *Mart. Herb. Fl. Brasil, No.* 300.—Cap-is scandens, *Vell. Fl. Flum.* 5, *t.* 109.

. In bushy places on the Corcovado. *Fl.* Sept.

Connarus *Fluminensis* (sp. n.); foliis deciduis impari-nnatis, foliolis 4-5-jugis ellipticis acuminatis basi acu-, junioribus pubescentibus.

. On dry wooded hills at Rio Comprido. *Fl.* Sept.

utex 8-10-pedalis. Foliola 2½-3 poll. longa, 16 lin. er lata. Panicula axillaris multiflora. Pedicelli gra-4 lin. circiter longi. Sepala lanceolata, ciliata, apice ita. Petala alba. Capsula 1-2, oblonga, sessilis, mo-erma.

Schmidelia *puberula, Cambess. in St. Hil. Fl. Br. Merid. p.* 382. *Don, Dict.* 1, *p.* 663.

. In woods on the Corcovado. *Fl.* Aug.

Micranthemum *orbiculatum, Mich. St. Hil. Monog. des im. p.* 47.—Pinarda repens, *Vell, Fl. Flum.* 1, *t.* 52,

. On moist rocks by the Aqueduct. *Fl.* Aug.

Lacistema *pubescens, Mart. Nov. Gen.* 1. *t.* 94. *Diet-h Syn. Plant.* 1, *p.* 124.

. Common by the Aqueduct on the Corcovado. *Fl.* ly, Aug.

Casearia *affinis* (sp. n.); ramulis puberulis demum bratis, foliis oblongis acuminatis subcoriaceis serrula-basi acutis utrinque glabris crebre punctatis, umbellis ssilibus, floribus glabris 5-fidis, sepalis membranaceis iatis, staminibus fertilibus 10 calyce longioribus, fila-entis ciliatis, antheris subglobosis, stylo breviter trifido.

. In woods on the Corcovado. *Fl.* Oct.

utex 6-8-pedalis. Folia 2-2½ pollicaria, 10 lin. lata. Pe-li graciles, petiolo longioribus.

is species is nearly related to *C. parviflora*, Willd., but s in having more coriaceous leaves, larger flowers, and r stamens. The apex of the style, being somewhat trifid, s it to the section *Crateria* of Bentham. Mr. Bentham iders the *C. parviflora* of the West Indies, and that described by St. Hilaire under the same name, as distinct species.

161. Achyrocline *flaccida, D.C. Prodr.* 6, *p.* 220.—Gnaphalium flaccidum, *Wein.—Spreng. Syst.* 3, *p.* 474.

Hab. Common in dry bushy places on the Corcovado. *Fl.* Aug. Sept.

162. Tetratome *elliptica* (sp. n.); foliis ellipticis acuminatis basi attenuatis supra medium distanter spinuloso-serratis margine subrevolutis, pedunculis masculis 3-4 axillaribus trifloris.

Hab. Bushy, sandy places about Rio, as on the Restingas at Copo-Cabana. *Fl.* July.

Frutex 3-4pedalis glabra. Rami teretes, ad petiolorum insertionem compressi. Folia opposita, petiolata, 3-3½ poll. longa, 16 lin. lata, elliptica, acuminata, basi attenuata, supra medium grosse et distanter spinuloso-serrata, margine leviter revoluta: petiolus 4 lin. longus, supra canaliculatus, subtus convexus. Flores masculi solum noti. Pedunculi axillares, 3-4, teretes, trifidi; pedicelli pedunculo breviores, laterales duo bracteolis duabus subulatis stipati. Perigonium campanulatum, 2 lin. longum, luteum; limbus quadrifidus; laciniis subæqualibus, duabus rotundatis, duabus æstivatione interioribus truncatis. Stamina 30 circiter, serie quadruplici parieti interiori perigonii inserta, inclusa. Filamenta brevissima apice dilatata. Antheræ subrotundæ biloculares, loculis apice confluentibus, circumferentia dehiscentibus.

163. Paullinia *falcata* (sp. n.); foliis impari-pinnatis, foliolis 3-jugis, 2 inferioribus 3-foliatis, omnibus oblongo-lanceolatis acuminatis basi rotundatis inæqualibus, grosse et distanter inciso-serratis supra glabris subtus pubescentibus, petiolo rachique alatis, capsula 3-alata.

Hab. In woods, on the Corcovado. *Fl.* Sept.

Caulis fruticosus, scandens, angulatus. Rami glabri. Folia impari-pinnata, foliolis inferioribus 3-foliatis; foliola 3-juga, oblongo-lanceolata, longe acuminata, basi rotundata, inæqualia, grosse et distanter inciso-serrata, serraturis 3-4, obtusis, obsolete lineis pellucidis notata, supra glaberrima, nitida, nervo medio pilosiusculo, subtus pubescentia: terminale 4 poll. longum, 1½ latum, petiolo lineam circiter longo, marginato; cæteris subæqualibus: petiolus communis 2½ pollicaris, nudus, striatus, subtus convexus, supra canaliculatus, villosiusculus. Stipulæ foliaceæ, lanceolato-falcatæ, 12-13 lin. longæ, 3 circiter latæ, acutæ, basi cuneatæ, margine ciliatæ. Racemi axillares, solitarii, spicæformes, folio breviores, basi bicirrhosi: rachis angulatus, pilosus. Flores albi, pedicellati, pedicellis lineam circiter longis, basi bracteatis ciliatis. Calyx extus pilosiusculus. Fructus immaturus subclavatus, basi angustatus, apice trialatus stylique reliquiis apiculatus.

64. Serjania *cuspidata, Cambess. in St. Hil. Flora. Bras. Merid.* 1. *p.* 356.—S. Gaarumima, *Mart. Herb. Fl. Bras. n.* 70.—Paullinia Gaarumima, *Vell. Fl. Flum.* 4. *t.* 35.

AB. Among bushes on the Corcovado. *Fl.* Aug.

My plant I believe to be the same as the one described by ambessedes, although he has not noticed that the angles of e triangular branches are densely ciliated with long ferru-neous hairs, while the flat surfaces are nearly glabrous. It on account of this oversight that Martius, believing ambessedes' plant to be a different species, has retained e name which Vellozo had given to the plant figured by im in the Flora Fluminensis.

65. Gouania *cordifolia, Raddi.—DC. Prodr.* 2. *p.* 39.

AB. In hedges and bushy places, common. *Fl.* Aug. Sep.

66 Gymnanthes *variabilis, Mart. Mss. in Herb. Hook.*

AB. In dry bushy places, common. *Fl.* Nov.

67 Terebinthacea ? *sp.*

AB. On the Corcovado, rare. Collected in Nov.

My specimen of this number, which is a small shrub, is ot in a sufficiently good state to be determined. It is a taminiferous plant, and very probably belongs to some ribe of the old Natural Order *Terebinthaceæ.*

68. Glossostylis *aspera, Cham. et Schlect. in Linnæa,* 3, *p.* 22. *Bentham in Hook. Comp. Bot. Mag.* 1, *p.* 212.

HAB. In marshes about Rio, rare. *Fl.* Sep. Oct.

169. Eugenia *insipida, Cambess. in St. Hil. Fl. Br. Merid.* 2, *p.* 360.

HAB. In woods, rare. *Fl.* Oct.

170. Anacardium *occidentale, Linn.—DC. Prodr.* 2, *p.* 62.

HAB. In low, open, wooded places near the sea, common. *Fl.* Sep.

171. Anthurium *microphyllum, Endl.—Kunth, Enum.* 3, *p.* 72. —Pothos microphyllum, *Hook. Bot. Mag. t.* 2953.

HAB. On rocks by the sea. *Fl.* Oct.

172. Gymnanthes, *sp.*

HAB. On the Morro do Flamengo. *Fl.* Oct.

173. Centrosema *decumbens, Mart. in Benth. Comment. de Legum. Gen. p.* 56.

HAB. In dry bushy places, common about Rio. *Fl.* Sep.

174. Polygala *violoides, St. Hil. Fl. Bras. Merid.* 2, *p.* 48.

HAB. In a dry wood, at Rio Comprido. *Fl.* Aug.

175. Messerschmidia *subulata,* (sp. n.); foliis petiolatis oblongo-lanceolatis utrinque sparse adpresso-villosis acuminatis basi rotundatis, spicis lateralibus terminalibusque brevibus ramosis, calycis laciniis subulatis tubo corollæ longioribus.

Hab. In shady rocky places, on the Corcovado. *Fl.* Sep.

Suffruticosa, bipedalis. Rami teretes. Folia 5-7-poll. longa, 10-14 lin. lata. Petiolus 4-6 lin. longus. Calyx 5-partitus, laciniis oblongo-linearibus, acuminatis, ciliatis. Corolla pallide purpurea.

178. Strychnos *triplinervia, Mart. Herb. Fl. Bras, n.* 616 (7). Gardenia trinervis, *Vell. Fl. Flum.* 3, *t.* 10.

Hab. On the ascent of the Corcovado. *Fl.* Nov.

179. Pavonia *spinifex, Willd.—DC. Prodr.* 1, *p.* 442.

Hab. In bushy places, not common. *Fl.* Nov.

180. Desmodium *ancistrocarpum, DC. Prodr.* 2, *p.* 331.

Hab. In sandy bushy places, common. *Fl.* Oct.

181. Herpestes *Monniera, H. B. et K. Nov. Gen. et Sp.* 2, *p.* 294. *Bentham in Hook. Comp.* 2, *p.* 58.—Calytriplix obovata, *Ruiz et Pavon.*

182. Cordia *superba* var. a. *cuneata, Cham. et Schlect. in Linnæa,* 4, *p.* 474.—*G. Don Dict.* 4, *p.* 375.

Hab. On the ascent of the Corcovado. *Fl.* Oct.

183. Miconia *fasciculata* (sp. n.); ramis obsolete tetragonis, petiolis paniculisque pube stellatâ ferrugineâ velutino-tomentosis, foliis oblongo-lanceolatis acuminatis triplinerviis basi acutis integerrimis supra glaberrimis nitidis subtus rufo-stellato-pubescentibus, paniculis terminalibus et axillaribus, ramulis oppositis multifloris, floribus in fasciculos aggregatos sessilibus, calycis tubo obconico stellato-tomentoso, limbo brevissimo 5-dentato, petalis oblongis emarginatis, lobis inæqualibus.

Hab. On the ascent of the Corcovado. *Fl.* Oct.

Frutex 6-8 pedalis. Folia supra siccitate nigrescentia, 4½-5 poll. longa, 16 lin. circiter lata. Petala alba. Filamenta glabra. Antheræ clavatæ 1-porosæ. Stylus filiformis exsertus. Stigma obtusum.

Allied to *M. corallina, Spreng, in Mart. Herb. Fl. Bras. n.* 77.

184. Gloxinia *speciosa, Lodd. Bot. Cab. t.* 28. *Hook. Bot. Mag. t.* 1937. *G. Don, Dict.* 4, *p.* 649.

Hab. On dry wooded hills, common. *Fl.* Sep.

185. Coffea *eriantha* (sp. n.); foliis obovatis ellipticisque utrinque acutis supra glaberrimis nitidis subtus pubescentibus læviter revolutis, stipulis late ovatis obtusis bicuspidatis junioribus ciliatis, paniculis terminalibus, ramis bis bifidis, floribus 5-fidis, laciniis longe aristatis, antheris exsertis.

HAB. In woods on the Ilha do Governador, in the Bay of Rio de Janeiro. *Fl.* Nov.

Frutex 6-10pedalis. Rami adulti, cinerei, glabri, juniores pubescentes. Folia 3-3½ poll. longa, 1-1½ poll. lata. Petiolus supra canaliculatus, pubescens, 3 lin. longus. Panicula bipollicaris, rufo-piloso-tomentosa; rami inferiores ad bifurcationem usque 6 lin. longi, bis terque cymoso-dichotomi, ramulis patulis, primariis triplo brevioribus, flore alari sessili. Bracteolæ late subulatæ, pilosæ. Ovarium subcylindricum, parvum, laciniis calycinis angustis acutis ciliatis trinerviis coronatum. Corolla 7-8 lin. longa, tubuloso-infundibuliformis, extus dense fulvo-tomentosa, intus fauce villosa, 5-fida, laciniis oblongis acutis, extus infra apicem longe aristatis. Antheræ lineares. Stylus filiformis, inclusus, bifidus, ramis crassioribus stigmatosis. Fructus non vidi.

189. Paritium *tiliaceum, St. Hil. Fl. Bras. Merid.* 1, *p.* 256. *Don, Dict.* 1, *p.* 485.—Hibiscus tiliaceus, *Linn. DC. Prodr.* 1, *p.* 454.

190. Galipea *lasiostemon, St. Hil. in DC. Prodr.* 1, *p.* 731.—Lasiostemon sylvestre, *Nees et Mart. in Nova Acta*, 11, *p.* 171, *t.* 19.

HAB. In woods on the Ilha do Governador. *Fl.* Nov.

191. Solanum *auriculatum, Aiton, Hort. Kew,* 1, *p.* 246. *Dunal Monog. p.* 116. *Don, Dict.* 4, *p.* 415.—Solanum tabacifolium, *Vellozo, Fl. Flum.* 2, *t.* 89.

HAB. In woods on the Corcovado. *Fl.* July, Aug.

192. Myrcia *myrtillifolia, DC. Prodr.* 3, *p.* 250. *St. Hil. Fl. Bras. Merid.* 2, *p.* 326.

HAB. Dry wooded hills at Rio Comprido. *Fl.* Oct.

193. Clidemia *confertiflora, DC. Prodr.* 3, *p.* 156. *Don, Dict.* 2, *p.* 768.

HAB. On the Corcovado, by the Aqueduct. *Fl.* Sept.

194. Mendozia *Velloziana, Mart. Nov. Gen.* 3. *p.* 22. *t.* 210.

HAB. In bushy places, common about Rio. *Fl.* Oct.

195. Evolvulus *alsinoides, Linn. Chois. Convolv. Dissert. secunda, p.* 154.

HAB. In dry sandy places, common. *Fl.* Nov.

196. Dorstenia *ceratosanthes, Lodd.* var. *β. pinnatifida.*

HAB. In deep shady forests on the Corcovado. *Fl.* Nov.

197. Dorstenia *ceratosanthes, Lodd. Bot. Cab. t.* 1216. *Hook. Bot. Mag, t.* 2760.

HAB. In deep forests on the Corcovado. *Fl.* Nov.

However different these two varieties seem to may be, there can be no doubt of their being one and the same species, for I have often found entire and pinnatifid leaves on the same plant. Vellozo figures, in the Flora Fluminensis, vol. 1. t.138, under the name of *D. Ficus*, another variety with hastate leaves, being an intermediate stage between the other two.

198. Dalechampia *ficifolia, Lam. Dict.* 2. *p.* 258. *Spreng. Syst.* 3. *p.* 86.

HAB. In hedges common about Rio. *Fl.* Nov.

199. Coffea *nodosa, Cham. et Schlect. in Linnæa,* 9. *p.* 233.

HAB. In woods on the Ilha do Governador. *Fl.* Nov.

200. Gomphia *olivæformis*, *St. Hil. Fl. Brasil. Merid.* 1. *p.* 67. *Spreng. Cur. post. p.* 163.

HAB. In woods on the Ilha do Governador. *Fl.* Nov.

201 Inga, (*sp. n.*)

HAB. In woods on the Ilha do Governador, in the Bay of Rio de Janeiro. *Fl.* Nov.

This species will shortly be described and published by Mr. Bentham in his *Synopsis of the Mimoseæ*.

202. Myrcia *insularis* (sp. n.); caule arboreo, ramis apice rubiginoso-tomentosis subcompressis, foliis oblongis acutis basi rotundatis glaberrimis, margine revolutis, paniculis folio brevioribus multifloris, floribus glabris, calycinis lobis rotundatis.

HAB. In low woods on the Ilha do Governador. *Fl.* Nov.

Arbor parva. Folia 4½-6 poll. longa, 22-30 lin. lata, junioria pellucido-punctata. Petioli 4-6 lin. longi, subtus convexi, puberuli, supra canaliculati. Paniculæ axillares terminalesque ramosæ, rachi ramulisque rubiginoso-tomentosis. Flores in ramulis densi, subsessiles. Calyx glaber, lobis valde inæqualibus, pellucido-punctatis. Petala 5 rotundata, glabra, pellucido-punctata, alba.

Near *Myrcia rubiginosa* and *M. laurifolia* of St. Hil., but fleur est toujours à 5, et non à 4 parties; 2°. de l'*Acmena*, parceque le bord du calice n'est ni tronqué, ni roulé en dedans; 3°. du *Sizygium*, du *Calyptranthes*, et même du *Caryophyllus*, parceque ni le calice, ni la corolle ne forment un capuchon ou une coiffe avant la fleuraison; 4°. du vrai genre *Myrtus*, par les pedoncules multiflores et en grappe ou en panicule, et jamais uniflores; 5°. du *Nelitris* et du *Campomanesia*, par le petit nombre des loges du fruit; 6°. du *Psidium*, parce que les 5 lobes du calice sont visibles et distincts dès le bouton, et non soudès en un corps unique qui se rompt à la fleuraison, etc."

203. Alsodea *paniculata*, *Mart. N. Gen.* 1. *t.* 20.—Conohoria Rinorea. *St. Hil. Mem. Mus.* 11. *p.* 495.

HAB. On the ascent of the Corcovado. *Fl.* Nov.

I have not had an opportunity of comparing my specimens with those of Aublet's *Rinorea Guianensis*; but if his figure be a correct one, the Rio plant is a very distinct species, having much smaller and less serrated leaves, a more compact inflorescence, and nearly sessile anthers.

204. Anona *acutiflora*, *Endlich. et Mart. Flora Brasil, Anonaceæ*, *p.* 10.

HAB. On the Corcovado. *Fl.* Sept.

205. Cleome *dendroides*, *Schult. Syst.* 7. *p.* 28.—C. arborea. *Weinm. in Syll. p.* 227. *Hook. Bot. Mag. t.* 3296.

HAB. In rocky bushy places near the sea, as on the Morro do Flamengo. *Fl.* Oct. Nov.

206. Habenaria *parviflora*, *Lindl. Gen. and Sp. p.* 314.

HAB. In open grassy places on the Corcovado. *Fl.* Oct. Nov.

207. Pelexia *triloba*, *Lindl. Gen. and Sp. Orch. p.* 483.

HAB. In shady places on the Corcovado. *Fl.* Nov.

208. Paspalum *conjugatum*, *Berg. Act. Helv.* 7. *p.* 129. *Kunth, Enum.* 1. *p.* 51.

HAB. In woods, at Rio Comprido. *Fl.* Nov.

209. Sporobolus *tenacissimus*, *Beauv. Agrost. p.* 26. *Kunth Enum.* 1. *p.* 211.—Vilfa tenacissima, *Nees in Mart. Fl. Bras.* 2. *p.* 393.

Hab. Dry open places on the Corcovado. *Fl.* Nov.

210. Panicum *paludicola, Nees in Mart. Fl. Bras.* 2. *p.* 197. *Kunth Enum.* 1. *p.* 91.

Hab. In moist wooded places on the Pedra Bonita, at Tejuca. *Fl.* Nov.

211. Setaria *imberbis, R. et S. syst.* 2. *p.* 891.—Panicum imberbe. *Poir. Enc.—Nees in Mart. Flora Bras.* 2. *p.* 239.

Hab. At Tejuca. *Fl.* Nov.

212. Eleocharis *interstincta, Br. Prodr.—Kunth Enum.* 2. *p.* 154.

Hab. In marshes at Tejuca. *Fl.* Nov.

213. Herpestes *lanigera, Cham. et Schlect. in Linnea,* 2. *p.* 573. *Benth. in Hook. Comp.* 2. *p.* 58.

Hab. In ditches and slow running streams at Tejuca. *Fl.* Nov.

214. Torenia *parviflora Hamil.—Benth. Scroph. Ind. p.* 39.

Hab. In moist open places at Tejuca. *Fl.* Nov.

215. Silene *Gallica, Linn.—St. Hil. Fl. Bras. Mérid.* 2. *p.* 162. *Don, Dict.* 1. *p.* 402.

Hab. In moist pastures at Tejuca. *Fl.* Nov.

216. Plantago *tomentosa, Lam.—R. et S. Syst.* 3. *p.* 126. *Schlect. in Linnea,* 1. *p.* 169.

Hab. In dry open places at Tejuca. *Fl.* Nov.

Hab. In dry sandy places by the sea-side, common. *Fl.* Nov.

222. Anagallis *arvensis*, var. α, *cærulea*, *Willd. Sp. Plant.* 1. *p.* 821. *St. Hil. Mem. des Prim. p.* 16.—Erva do Capitão, *vernac.*

Hab. In dry sandy fields about Rio and at Tejuca. *Fl.* Nov.

223. Clidemia *Curassana*, *DC. Prodr.* 3. *p.* 162.—*Don, Dict.* 2. *p.* 772.

Hab. In woods at Tejuca. *Fl.* Nov.

224. Tropæolum *orthoceras*, (sp. n.); foliis peltinerviis subreniformibus 5-lobis lobis integris obtusis mucronatis, petalis 2 superioribus lobatis mucronatis, 3 inferioribus minoribus lacerato-fimbriatis, calcare recto corollâ paulo longiore.

Hab. Among bushes by the sea-side at the foot of the Gavea.

Herbacea, scandens. Folia 2-2½ poll. diametro, lobis late orbiculatis. Petioli 2-3 poll. longi, sæpe cirrhiformes. Sepala oblonga, obtusa. Petala lutea.

This species has considerable affinity with *Tr. aduncum*, Sm., but differs in having the spur straight, and shorter in proportion to the length of the corolla, the lower petals more lacerated, and in being altogether a larger and stronger plant.

225. Soliva *anthemidifolia*. *Br.* *DC. Prodr.* 6. *p.* 142.—Gymnostyles anthemifolia, *Juss. Ann. Mus.* 4. *p.* 262. *t.* 61. *f.* 1.

Hab. In open grassy places on the ascent of the Pedra Bonita at Tejuca. *Fl.* Nov.

226. Oxypetalum *pilosum*, (sp. n.); totum piloso-pubescens, caule volubili, foliis ovato-oblongis acuminatis cordatis, pedunculis cymosis multifloris, petalis lineari-lanceolatis longe acuminatis reflexis, coronæ foliolis carnosis rotundatis, retinaculis antherarum basi membranaceo-appendiculatis.

Hab. Among bushes on the ascent of the Pedra Bonita, at Tejuca. *Fl.* Nov.

Caules suffrutescentes, volubiles, teretes. Folia opposita, petiolata, supra viridia, subtus pallidiora, 2½ poll. longa, 9-10 lin. lata. Pedunculi petiolos subæquantes, circiter 10-flori. Cor. tubo brevi. Pollinis massæ basi obtusæ. Retinacula linearia, obtusa, basi membranaceo-appendiculata: membrana margine incrassata, superne ad marginem in appendicem linearem obtusam subrecurvam producta.

Differs from *O. umbellatum*, Gardn. (supra no. 77*), in having the retinacula appendiculate, and in the shorter tube of the corolla, with longer and more reflexed segments. The latter characters also distinguish it from *O. appendiculatum*, Mart., which, besides, has the retinacula appendiculate at the apex, and not at the base, as in *O. pilosum*.

227. Monstera *cuspidata*, (sp. n.); caulescens scandens, foliis oblique ovato-oblongis acuminatis cuspidatis basi rotundatis petiolis late marginato-membranaceis, spatha (alba) obtusa petiolata, spadicem breviore.

HAB. On the stems of trees in the woods on the Gavea. *Fl.* Nov.

228. Dichorisandra *Tejucensis*, *Schultz, fil. in Syst. 7. p.* 1186.

HAB. In bushy places at Tejuca. *Fl.* Nov.

[illegible]. Schwenckia *mollissima, Nees et Mart. in Flora, p.* 47.

[illegible]. In bushy places on the road to the Botanic Garden. *Fl.* Oct.

[illegible]. Verbena *Bonariensis, Linn.—Spreng. Syst.* 2. *p.* 748. *Mart. Herb. Fl. Bras. n.* 1033.

[illegible]. In waste and bushy places, common. *Fl.* Nov.

[illegible]. Boehmeria *arborescens* (sp. n.); arborea, foliis longe petiolatis oblongis lanceolatis acuminatis basi attenuatis serratis 3-nerviis utrinque strigoso-pilosiusculis, spicis elongatis axillaribus solitariis dioicis.

[illegible]. In the woods at the foot of the Pedra Bonita, Tejuca. *Fl.* Nov.

Arbor parva circiter 16-pedalis. Folia 5-7 poll. longa, [illegible] lin. lata. Petioli 1-1½ poll. longi. Spica mascula elon[illegible], gracilis, interrupte glomerata, foliis longior. Calyx [illegible] pilosiusculus, campanulatus, 4-partitus; laciniis ovatis, [illegible]cavis, mucronatis. Antheræ rotundatæ, exsertæ. Flores [illegible]ineos non vidi.

[illegible]5. Alströmeria *salsilloides, Mart. in Schul. Syst.* 7. *p.* 748. —Amaryllis scapis ex umbella foliacea multiflora, etc. *Vandelli Fl. Lusit. et Bras. p.* 19.

Hab. In bushy places at the foot of the Gavea. *Fl.* Nov.

236. Laguncularia *racemosa, Gaert.—DC. Prodr.* 3. *p.* 17. —Conocarpus racemosa. Linn.

Hab. In muddy places on the sea shore. *Fl.* Nov.

237. Solanum *inæquale, Velloz. Fl. Flum.* 2. *t.* 116. *Mart. Herb. Fl. Bras. n.* 261.

Hab. In woods at Tejuca. *Fl.* Nov.

238. Solanum *caavurana, Velloz. Fl. Flum.* 2. *t.* 112. *Mart. Herb. Flor. Bras. n.* 250.

Hab. In woods at Tejuca. *Fl.* Nov.

239. Witheringia *hirsuta* (sp. n.); tota hirsuta, caule fruticoso subsarmentoso, foliis ovatis acutis basi rotundatis integerrimis, pedunculis axillaribus solitariis petiolis longioribus.

Hab. In hedges at Tejuca. *Fl.* Nov.

Frutex sarmentosus, hirsutus; pili articulati. Rami teretes.

Folia 2-3½ poll. longa, 10-14 lin. lata. Petiolus 8-10 lin. longus. Calyx 5-partitus; laciniis oblongis, acutis, extus hirsutissimis, intus pilosiusculis. Corolla rotata, 5-partita, laciniis valvatis, lanceolatis, extus pilosis. Stamina 5. Filamenta complanata, basi dilatata. Antheræ conniventes, ovato-oblongæ, cordatæ, æquales, longitudinaliter dehiscentes.

240. Polygonum *acre*, *H. B. et K. Nov. Gen.* 2. *p.* 179. *Spreng. Syst.* 2. *p.* 253.

Hab. In ditches and marshy places, common. *Fl.* Oct.

241. Polygonum *glabrum*, *Willd. Sp. Plant.* 2. *p.* 447. *Spreng. Syst.* 2. *p.* 258.

Hab. In moist places at Tejuca. *Fl.* Nov.

242. Epidendrum *filicaule*, *Lindl. Gen. and Sp. p.* 101.

Hab. On trees on the Pedra Bonita, at Tejuca. *Fl.* Nov.

243. Epidendrum *fragrans*, *Swartz.—Lindl. Gen. et Sp. p.* 97. *Bot. Mag.* 1669.

Hab. On the stems and branches of *Vellozia candida*, on the Pedra Bonita, at Tejuca. *Fl.* Nov.

244. Cattleya *labiata*, *Lindl. Coll. Bot. t.* 33. *Gen. and Sp. p.* 116. *Hook. Exot. Fl. t.* 157.

Hab. On rocks near the summit of the Pedra Bonita at Tejuca. *Fl.* Nov.

mis ovatis obtusis glabris margine ciliatis, cor. tubulosa calyce vix duplo longiore.

HAB. In woods at Tejuca. *Fl.* Nov.

Frutex 2-3-pedalis. Folia 3-4 poll. longa, 15-20 lin. lata. Petioli semipollicares. Corolla lutea. Genitalia inclusa.

This species is distinguished from *B. lutea* by its entire leaves, and by having only two, rarely three, flowers in the axils of the leaves; and from *B. umbrosa*, Mart. to which it is otherwise nearly allied, by the pedicels being sessile, not pedunculated.

246. (2). Besleria *cuneata*, (sp. n.); caule lignoso vix tetragono erecto apice cum petiolis et pedicellis strigilloso-pilosis, foliis longe petiolatis acuminatis basi cuneatis integerrimis supra pilosiusculis subtus strigilloso-pubescentibus margine ciliatis, pedicellis ad axillas geminis 1-floris petiolis multo brevioribus, calyce 5-partiti lobis subæqualibus integerrimis oblongis glabris margine subciliatis, cor. tubulosa calyce vix duplo longiore.

HAB. In deep shady woods on the Corcovado. *Fl.* Nov.

Suffrutex 3-pedalis. Folia 6-8 poll. longa, 1½-1¾ poll. lata. Corolla lutea. Genitalia inclusa.

In many respects this approaches the last species, but appears to be well distinguished by its leaves, which are of a much thinner texture, about the same breadth, but twice as long, more acuminated, and cuneate at the base. The pedicels are much shorter in proportion to the length of the petiole, and the calycine segments are narrower. Both the species have sometimes three flowers in the axils.

247. Carpotriche *Braziliensis*, *Zuccar. Plant. Nov. Fasc.* 2. *t.* 5.—Mayna Braziliensis, *Raddi Plant. Nuov. Bras.* 23. *f.* 1.—*DC. Prodr.* 1. *p.* 79.

HAB. On the ascent of the Pedra Bonita at Tejuca. *Fl.* Nov.

248. Franciscea *ramosissima*. *Pohl. Pl. Bras.* 1. *p.* 5. *t.* 4.—*Don, Dict.* 4. *p.* 477.

HAB. Among bushes near the summit of the Corcovado. *Fl.* Oct.

249. Echites *atroviolacea*, *Steudel*, *in Flora* 1841, *Band* 1. *Beiblatter*, *p.* 75.

HAB. On the summit of the Pedra Bonita. *Fl.* Nov.

250. Echites *crassinoda*, (sp. n.); glaberrima, caule ramoso nodoso, foliis lanceolatis acutis vel subacuminatis basi acutis utrinque nitidis, racemis axillaribus in rachis elongatis compressis subflexuosis sub-6-floris, calycis laciniis lanceolatis acuminatis tubi parte cylindrica paulo brevioribus, corollæ tubo infra medium campanulato, limbi laciniis obovato-orbicularibus.

HAB. In rocky places on the summit of the Corcovado. *Fl.* Oct.

Caulis fruticosus, subsarmentosus, ad insertionem foliorum incrassatus, epidermide tenuissima subhyalina solubili tectus. Folia breve petiolata, parum remota, coriacea, lanceolata utrinque acuta, glaberrima, nitida, nervo medio utrinque prominulo, margine vix revoluta, 3-3½ poll. longa, 9-12 lin. lata; petioli 2-3 lin. longi, supra canaliculati. Stipulæ interpetiolares, 4-dentatæ, dentes breves, cuspidati. Racemi axillares, elongati, subflexuosi, compressi, sub-6-flori. Pedi-

251. Gesneria *Douglasii*, *Lindl. Bot. Reg. t.* 1110.—*Martius Nov. Gen.* 3, *p.* 34.—G. verticillata, *Hook. Bot. Mag. t.* 2776.—G. maculata, *Mart. Nov. Gen.* 3, *t.* 215.

HAB. On trees, and rocks on the Pedra Bonita at Tejuca. *Fl.* Nov.

252. Utricularia *longifolia* (sp. n.); scapo erecto 4-9-floro, foliis longe petiolatis oblongis obtusiusculis basi longe attenuatis, bracteâ unicâ 3-partitâ, foliolo calycino superiore ovato acuminato, inferiore apice bifido, corollâ amplâ, labio superiore elliptico-oblongo, inferiore late orbiculato integro, calcare labio inferiore breviore tereti acuto porrecto.

HAB. In moist places on the summit of the Pedra Bonita, at Tejuca. *Fl.* Nov.

Herba perennis, glabra. Radices cæspitosæ, fibrosæ. Folia radicalia, 5-10 poll. longa, 9-12 lin. lata. Scapus circiter pedalis, rigidus. Pedunculi distantes pollicem circiter longi. Calycinum foliolum superius leviter nervosum, inferius crassius et valde nervosum. Corolla violacea. Stylus brevis, apice infundibuliformis.

253. Polymnia *Siegesbeckia*, *DC. Prodr.* 5, *p.* 516.

HAB. In bushy places, and by road-sides about Rio. *Fl.* Nov.

254. Mimosa *elliptica*, *Benth. in Hook. Jour. Bot.* 4, *p.* 400.

HAB. On arid, bushy, hilly places at Rio Comprido. *Fl.* Nov.

List of Ferns from the neighbourhood of Rio de Janeiro, collected in 1836.

1. Lygodium *volubile*, *Sw.*

2. and 3. Anemia *caudata*, *Kaulf.*—A. Mandioccana. *Raddi.*

4. Anemia *Gardneri*, *Hook.*

5. Anemia *humilis*, *Sw.*—A. repens, *Raddi.*

6. Anemia *fraxinifolia*, *Raddi.*

7. Anemia *flexuosa*, *Raddi.*

8. Acrostichum *aureum*, *Linn.*

9. Lomaria *Ryani*, *Kaulf.*
10. and 11. Gymnogramma *tomentosa*, *Kaulf.*
12. Gymnogramma *chrysophylla*, *Kaulf.*
13. Gymnogramma *Calomelanos*, *Kaulf.*
14. Gymnogramma *chærophylla*, *Desv.*
15. Meniscium *dentatum*, *Presl.*—M. palustre, *Raddi.*
16. Aspidium falciculatum, *Raddi.*
17. Polypodium *grande*, *Presl.*—P. macropterum, *Kaulf.*
18. Polypodium *proliferum*, *Kaulf.*
19. Polypodium *Plumula*, *Humb. et Bonp.*
20. Polypodium *phyllitidis*, *Linn.*
21. and 22. Pleopeltis *percussa*, *Hook.*
23. Pleopeltis *angusta*, *Humb. et Bonp.*
24. Polypodium *sepultum*, *Kaulf.*
25. Polypodium *incanum*, *Sw.*
26. Polypodium *neriifolium*, *Schk.*
27. Alsophila *ferox*, *Presl.*
28. Lastrea *polyphylla*, *J. Sm.* — Aspid. polyphyllum, *Kaulf.*
29. Gleichenia *immersa*, *Spreng.*
30. Diplazium *plantagineum*, *Sw.*
31. Hemidictyum *marginatum*, *Presl.*

43. Asplenium *woodwardioideum*, (sp. n.); frondibus pinnatis, pinnis alternis lineari-oblongis longe acuminatis basi vix inæqualibus subcuneatis argute serratis, soris costæ mediæ approximatis.

HAB. In dry woods on the Corcovado.

Stipes tetragonus, quadrisulcatus, atro-fuscus. Frons pinnata 1½-2pedalis. Rachis sparse fusco-paleaceo-villosa. Pinnæ alternæ 3½-4 poll. longæ, 5 lin. latæ, breve petiolatæ, lineari-oblongæ, longe acuminatæ, basi vix inæquales, subcuneatæ, infra medium argute serratæ, supra grosse duplicato-serratæ. Venæ bifurcatæ. Sori lineares, costæ mediæ approximati subimbricati. Indusia membranacea.

Allied to *A. Serra*, Langsd. but well distinguished by its narrower pinnæ, which are nearly equilateral at the base.

44. Asplenium *Braziliense*, *Raddi.*

45. Diplazium *striatum*, *Presl.*—Aspl. striatum, *Linn.*

46. Diplazium *coarctatum*, *Link.*

47. Blechnum *Braziliense*, *Raddi.*

48. Blechnum *occidentale*, *Linn.*

49. Blechnum *glandulosum*, *Kaulf.*—Bl. polypodioides, *Raddi.*

50. Blechnum *Lanceola*, *Sw.*—B. lanceolatum, *Raddi.*

51. Lastrea *patens*, *Presl.*

52. Aspidium *macrophyllum*, *Sw.*

53. Lastrea *patens*, *Presl.*

54. Polystichum *pallidum*, (sp. n.); frondibus bipinnatis, pinnulis ovato-oblongis acutis mucronatis, superioribus subfalcatis mucronato-serratis basi sursum truncatis auriculatis, deorsum longe cuneatis, inferioribus profunde pinnatifido-pinnatis, stipite rachique paleaceo-hirsutis.

HAB. In woods on the Corcovado, rare.

Frondes 2-3pedales. Rachis tetragona, quadrisulcata, paleis fuscis tenuibus piliformibus dense obsita. Pinnæ inæquilaterales, alternæ, ovato-oblongæ, acutæ, 8-10 pollicares. Pinnulæ 18-26 lin. longæ, 6-9 lin. latæ, subtus subpaleaceæ. Venæ multifurcatæ. Sori magni, rotundi, subbiseriales in qualibet lacinia. Indusium non vidi.

55. Adiantum *dolabriforme, Hook.*
56. Adiantum *serrulatum, Linn.*
57. Cheilanthes *radiata, J. Sm.*—Adiantum radiatum, *Linn*
58. Adiantum *falcatum, Sw.*
59. Adiantum *polyphyllum, Willd.*
60. Davallia *elata, Sw.*
61. Trichopteris *excelsa, Presl.*
62. Dicksonia *adiantoides, Humb.*
63. Trichomanes *Mandioccanum, Raddi.*
64. Lycopodium *cernuum, Linn.*
65. Lycopodium *stoloniferum, Sw.*
66. Lycopodium *apodum, Linn.*
67. Lycopodium *albidulum, Sw.*
68. Lycopodium *linifolium ? Linn.*
69. Lycopodium *tetragonum, Hook. et Grev.*
70. Polypodium *Catherinæ, Langsd. et Fisch.*
71. Adiantum *obtusum, Desv.*
72. Vittaria *lineata, Sw.*
73. Polystichum *coriaceum, Schott.*
74. Marginaria *auriseta, Presl.*—Polyp. auriseta, *Raddi.*
75. Asplenium *serratum, Linn.*
75. (2) Gleichenia *emarginata, Raddi.*
75. (3) Lindsæa *stricta, Dryand.*

Botanical Excursions in SOUTH AFRICA, *by*

C. J. F. BUNBURY, ESQ.

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1. *Ascent of Table Mountain.—Rocks.—Plants of the mountains and flats.—Cultivated vegetables and fruits.—The Paarl, and its botanical riches.—Notes.*

IT is not very easy, during the summer, to find a favourable day for the ascent of Table Mountain, for it is scarcely to be attempted during the continuance of a south-easter, and these gales come on so suddenly as to thwart one's projects not less vexatiously than rainy days do in England. It is not merely the violence of the wind that hinders one from ascending, but the density of the cloud in which it envelopes the top of the mountain. It has happened to many people to be surprised, while on the summit, by the coming on of the "tablecloth," which made it impossible for them to find their way back; some have perished by falling from the cliffs under these circumstances, and many have been obliged to remain on the mountain all night, or even more than one night; a very unpleasant bivouac.

After being once or twice baulked by the sudden coming on of the south-easter, I undertook the ascent on the 28th of February, in company with my friend, Mr. Harvey, the Colonial Treasurer, a most zealous and accomplished botanist. We started at 4 o'clock in the morning, when the stars were shining brightly in a clear sky; though about the top of the mountain, there were some clouds of a suspicious appearance. For about two miles, the road is practicable for horses, and the ascent gentle; then we arrived at the Platte Klip, a broad smooth sheet of rock, washed by the only permanent stream which descends from the mountain on this side. Here the road ceases, and we enter upon what may be called the second region of the mountain, a kind of shoulder or buttress sloping up to the foot of the cliffs. The path by which we ascended was rough and narrow, winding among bushes, scattered Silver-trees, and masses of rock; it became steeper as we proceeded, and presently we reached a high rock of reddish sandstone, over which trickles a stream, very diminutive at this season, but forming a pretty little waterfall in the winter. I afterwards frequently visited this rock, which is the locality of several interesting plants (note A). A little way above it, begins the great ravine leading to the summit. I have already said that the face of Table Mountain looks somewhat like part of the wall of a fortress with two bastions: the ravine in question is in the re-entering angle between the right-hand, or N.W. bastion, and the curtain; it is of considerable width at the bottom, but narrows continually upwards, till at the top there is a space of only three or four yards between the walls of rock. The ascent is as steep as it can well be without being precipitous, and every where encumbered with loose angular fragments of rock, which bruise the feet, and are very apt to give way under you. Long tufts of coarse grasses and tough pliant rushes grow in the interstices of the stones, affording a useful support to the hands. Heaths, ferns, mosses, and a variety of small shrubs, (several of them peculiar to this situation), decorate the crevices of the grand mural cliffs of quartz-sandstone which bound the ravine.

At half past six, we reached the summit, which is 3,582 feet above the sea. The sun was now up, and the air around and above us quite clear, but it felt chill and damp, and the herbage was dripping wet; I could have fancied myself in quite a different latitude from Cape Town. The summit of Table Mountain, though varied by rocky mounds in some places and marshy depressions in others, is on the whole remarkably level, and forms a narrow plain, rather more than two miles long, with a general direction from N.W. to S.E.; at both extremities, as well as on the side towards the town, it is bounded by precipices; but the descent towards the S.W. is less abrupt, forming a succession of terraces. It is possible to ascend on horseback from this side, but by a very circuitous route. At the N.W. extremity, not far from the cleft by which we ascended, is another, going down towards Kamp's Bay, but scarcely practicable. Near the head of this is a small but perennial spring, the only one on the summit, and well-known to pic-nic parties.

A large part of the surface of this table plain is a kind of pavement of flat or rounded rocks, with herbage in the interstices; other parts are swampy, and covered with moss, or with tall rushes and fern. There are no trees, and few shrubs above two or three feet high, but the variety of plants is surprising. Many of them are peculiar to these elevated regions (note B), several even to this one mountain, while some range from the base to the summit without variation. Several of the most common European mosses and lichens (note C) grow here among all these exotic forms.

The view from the top of the mountain is extensive enough, but of no remarkable beauty. Cape Town, seen from hence, looks, as has been justly remarked, like a town built of cards.

Clouds approaching from the S.E. warned us to return to the gorge; and we had not long reached a safe station, before the south-easter began to be felt, the clouds came drifting fast over the mountain, and it soon became excessively cold. While we were collecting mosses and lichens in the pass, where they grew in great abundance and variety, the wind increased, the clouds descended lower on the mountain, and we were enveloped in a kind of "Scotch mist," which soon thickened into a pouring rain. The descent was almost as fatiguing, and required as much time as the ascent, great care being necessary to avoid slipping among the loose rocks. We were wet to the skin long before we got down, but in the valley the dust was flying.

I ascended Table Mountain a second time on the 10th of November, again in company with Mr. Harvey. We set out from his house at the same time as on the former occasion; a thick bank of mist then lay across the face of the mountain, not, however, reaching to the top; but when we looked down from the gorge, the scene was very singular and striking. An ocean of dense white fog covered the whole extent of the bay and of the low country, even to the distant chain of the Stellenbosch mountains, which rose sharp and clear above it. The top of the mountain was at this time very dry, more so than Harvey had ever known it before, and consequently we were less successful in botanizing than we had expected; yet I added upwards of twenty species to my collection. I have no doubt that one might ascend this mountain a hundred times and find some new plants every time.

The environs of Cape Town are not interesting to a mineralogist. The lower part of Table Mountain, to the height of perhaps 1500 feet, and the greater part of the Lion's Head, consist of granite, which is best seen on the "Kloof" road between these mountains, and in the descent towards Kamp's Bay. It is whitish, coarse-grained, rather porphyritic, in structure, and very subject to decomposition; in this state, it is cut by the rains into strangely deep chasms, as may be observed on the road aforesaid. I believe no extraneous minerals are found in this granite (note A). In the ascent of Table Mountain by the usual path, the granite is almost concealed from view by innumerable, large, loose blocks of sandstone, which are strewed over the heathy slopes; yet it may be traced up the bed of the stream which runs over the Platte forming a peak of a singular character. If we may judge from their appearance, the mountains extending down the coast from Kamp's Bay towards the Cape of Good Hope, are of the same structure as the Table, for they all exhibit similar stratified escarpments, supported by less precipitous basements, which have quite the character of the granitic slopes above Kamp's Bay. The Muysenberg, however, and the mountains to the south of it, along the shore of False Bay, consist, so far as I could see, entirely of sandstone, the granite showing itself only along the edge of the sea.

The lower part of the Devil's mountain is covered with a thick bed of hard red clay, mixed in parts with a great deal of quartz and ironstone gravel, and very similar in appearance to the soil of the Brazilian Campos. Beneath this may be seen, in some places, a hard, tough, imperfectly slaty, dark grey rock, with veins of quartz. The shore near the Green Point Lighthouse is bordered by rocks of this same substance.

For Botany, the season in which we arrived at the Cape was about the most unfavourable of the whole year. In my first walks in the neighbourhood of the town, I was disappointed as to the beauty of the native vegetation, and was more struck with its harsh, rigid, stunted character, than with any thing else; for nearly all the bulbous and herbaceous plants had been burned up by the parching heat, and although the variety of shrubs was very great, but few of them were in flower. The impression which the botanical scenery of this place made on me was very different from that which had been produced by the luxuriant vegetation of Rio. The uncultivated parts of Table Valley, and the lower slopes of the mountains, are rather thinly covered with heaths, and a variety of slender shrubs of a similar character, intermixed with prickly bushes resembling furze, thin wiry grasses, and abundance of hard tough rushes (*Restiaceæ*). In many places there are extensive groves of the *Witteboom*, or Silver-tree,*

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* *Leucadendron argenteum*, Br.

[illegible]

[illegible] the nearest [illegible]. This is not, however, [illegible] equally [illegible]. The [illegible] northern and eastern areas of the [illegible]. [illegible] the weak of the [illegible] common in the mountains [illegible]

[illegible] of the same tribe, and the [illegible] with its botanical riches. Even at the dryest time of the year, the variety of plants there is surprising. I often afterwards botanized on the Flats, and became well acquainted with their productions especially in January and February of the following year, (1839), after the Governor had hired a house on the "Camp Ground" for a summer residence.

Owing to the difference of soil and exposure, the plants of this sandy plain are, in great part, different from those of the Table Valley, though belonging to the same tribes. The heaths are numerous, and some of them of great beauty; one of the handsomest is *Erica mammosa*, a tall species, with large, tubular, waxy-looking flowers crowded into a sort of spike, and varying in colour, from a rich crimson, through various shades of pink and flesh-colour. Along the little streams which intersect the Flats in various directions, the *Erica concinna* grows nearly to the height of a man, and bears rich wreaths of delicate pink blossoms; while a variety of smaller species cover the dry sands. The *Chironias*, with their beautiful rose-coloured flowers; *Lobelias*, some of the most brilliant blue, and others golden yellow; *Struthiolas*, resembling Heaths in their form and foliage, but with flowers of the most delicious fragrance; *Aristeas*, whose beautiful azure blossoms remain open only a few hours; the stately *Watsonias*, with their tall, scarlet spikes; the lovely Belladonna Lily; and several of the Orchis tribe deserve to be mentioned among the most attractive plants of these sandy plains (note F). In many spots, is seen a curious, clammy, leafless herb,* growing parasitically on the roots of the Heaths, and bearing very handsome white blossoms; this was one of Mr. Harvey's numerous botanical discoveries, and has been very properly selected by his friend, Sir W. Hooker, to bear his nam.

There are no trees on the Flats, except the European oaks and pines which have been planted here and there; and, except around the *Vleys*, or pools, or along the margins of the streamlets, the shrubs do not rise above the height of two or three feet. Although the vegetation is so surprisingly varied and beautiful when carefully examined, yet its general effect in the landscape is quite like that of our English heaths.

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* *Harveya Capensis.*

One of the most common shrubs in the environs of Cape Town, especially on the hills, is a *Cliffortia*,[*] a strong, coarse bush, which deserves especial notice for the annoyance its prickly leaves cause to one in walking. It is worse than furze, for its leaves, which are as sharp as needles, very easily break off, and remain sticking in one's clothes or skin. Another species of the same genus,[†] a tall, and rather graceful shrub, with long, narrow leaves, is very common by the sides of streams, and extends throughout the southern part of the colony, as far as Graham's Town.

It was in the winter and spring months, after my return from the interior, that the vegetation of the Cape appeared in its full beauty, and perfectly charmed me with its riches. In August, September, and the early part of October, the beautiful flowers of the *Ixia* tribe appeared every where, and gave a singularly gay appearance to places which, in the dry season, had looked dismally barren. These are, in my opinion, the most attractive of all the South African plants. They are not confined to any particular soil or situation: many grow in loose sand, others on hard clay, or ferruginous gravel; some flourish in marshy places, others spangle the turf in the outskirts of the town. Green Point abounds in blue and violet-coloured *Babianas*, and with a fine purple and white *Sparaxis*.[‡] On the Devil's and Lion's Mountains grow the delicate rose-coloured *Ixia scillaris*, the golden *Ixia conica*, and numerous beautiful *Gladioli*, very various in size and colour. The showy *Antholyza*[§] is common in wet places and by rivulets among the hills, displaying its tall spikes of orange-red blossoms above the grass and rushes; the *Babiana ringens*, with its fantastically shaped scarlet flowers just peeping above the ground, flourishes in moist sand near Muysenberg; *Aristeas* and *Watsonias* adorn the Flats; and the bright starry flowers of various *Trichonemas*, white, or yellow, or pink, enliven the open ground in the immediate vicinity of the town.

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[*] *Cliffortia ructifolia.*

[†] *C. strobilifera.*

[‡] *S. grandiflora, var.* sometimes called S. Liliogo.

[§] *A. Æthiopica.*

Next to these, the plants of the *Orchis* tribe deserve especial mention. By far the finest of them is the *Disa grandiflora*, the glory of Table Mountain, and certainly one of the most brilliant flowers I ever saw; it grows only in a marshy hollow near the south-eastern extremity of the summit of the mountain, where it is pretty plentiful among the rushes on the margins of small pools and streamlets, in a black, boggy soil. No plant is more strictly local. In its colours, it reminds one much of the well-known Mexican *Tigridia*, common in our gardens, but its scarlet is far more vivid. Several other interesting species of *Disa* are found on the top of the same mountain, and others on the Flats, together with some large and showy kinds of *Satyrium*. One of the most common plants of this tribe in the neighbourhood of Cape Town, growing almost every where among the bushes, is the *Disperis Capensis*, sometimes called the Hottentot Bonnet, the shape of its purple and green flower reminding one of some fanciful head-dress. Many other kinds are equally singular in form and appearance. This part of the Cape colony produces none of those curious plants called by botanists Orchideous Epiphytes, which flourish on old moss-grown trees, and which belong chiefly to climates at once moist and hot. It is remarkable, however, that some of them occur near Graham's Town, where the average quantity of rain is considerably less than in the Cape district.

I have already mentioned the Bella-donna Lily, which in February and March decorates various parts of the sandy Flats with its lovely blossoms of various shades of rose-colour. In the sands near Mysenberg, grows another noble plant of the same family, the Chandelier Lily,* with an ample-spreading umbel of more than twenty deep crimson flowers, on long stalks, which curve gracefully upward, like the branches of a chandelier. The *Hæmanthi*, or Blood-flowers, plants more singular than beautiful, are very common on the Flats.

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* *Brunsvigia multiflora.*

Few of the South African plants are more deserving of notice than the *Proteas*, of which there is a great variety in the environs of Cape Town. One of the most common, and at the same time one of the most beautiful of them, is the Sugar-bush,* with its bright green leaves, and large cup-shaped flower-heads delicately tinted with pink, green, and white. The quantity of honey in these flowers, when they first expand, is so great, that by merely inverting them, one can pour it out as from a cup; and it attracts swarms of beetles, bees, and other insects, which are constantly to be seen revelling in its sweets. Another very fine species,† abundant in the Kloof, and under the western cliffs of Table Mountain, bears flowers‡ four or five inches long, clothed with a kind of glossy black fur, and beautifully feathered at the top with tufts of silver-white hairs. But the *Protea cynaroides* is the most remarkable of all the species for the size of its flowers, which are almost as broad as the crown of a man's hat, though the stem is frequently not more than a foot high; their colour is a pale pink. This plant grows on the Flats and on the top of Table Mountain, and ranges from the neighbourhood of Cape Town to the eastern extremity of the colony. Many other species of *Protea* and of genera allied to it, less showy than these, but very neat in their foliage and general appearance, occur in various parts of the Cape peninsula, especially near Simon's Town. They delight to grow in the most barren soils, in loose, dry sand, or among sharp, broken stones.

Some of the *Proteas* of the Cape are gregarious plants, growing usually in great quantity where they occur at all, and occupying considerable spaces of ground without much mixture. This is the case, in particular, with the Sugar-bush, the *Kreupelboom*,* and the Silver-tree. The first forms a thick belt of shrubbery, of great extent, along the eastern flanks of the Devil's and Table Mountains, and clothes their underfalls where they join the Flats, as well as the Wynberg Hill, &c.; the second predominates in like manner along the northern bases of the same mountains, and the third, at a somewhat greater elevation.

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* *Protea mellifera.*

† *Protea melaleuca*, R. Br.

‡ Strictly speaking, they are heads, or masses of flowers.

It is curious that scarcely any of the Cape plants of this tribe, numerous and beautiful as they are, are known to be in any way useful except as fuel. The honey of *Protea mellifera* is said, by Thunberg, to be a good pectoral medicine; the bark of some species† contains a great deal of tanning matter, which might probably be turned to account; and the nuts of *Brabeium* are said to be eatable if prepared by soaking for some hours in fresh water; but by far the greater quantity appear to possess no qualities that can render them either useful or noxious to man. The same, indeed, may be said of many other tribes of Cape plants, and those some of the most interesting to the botanist and the gardener. Undoubtedly they are all important in the economy of nature, and it is impossible to believe that so much beauty had been bestowed on them in vain. I have long been convinced that plants were not created merely to supply the physical wants of man, and that those which are not directly *useful* to us, in the ordinary sense of the word, are not on that account, the less admirable, or the less worthy of our attention.

But the Cape plants are not all destitute of active properties. The *Diosmas*, which are very numerous throughout the southern parts of the colony, all possess a very strong, pungent, and generally disagreeable smell, and are of considerable importance in medicine; in the colony, indeed, the leaves, steeped in vinegar or brandy, are universally employed in domestic practice, (under the Hottentot name of *Buke*, or *Bukoo*), and are held "a certain remedy, so the old ladies assure you, for most of the ills that flesh is heir to."* They have even been introduced into European practice, and, I believe, with good effect.

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* *Leucospermum conocarpum.*

† *Leucadendron argenteum*, *Leucospermum conocarpum*, and *Protea grandiflora.*

The Bear's foot,† an ugly, prickly, repulsive-looking plant, with broad leaves spreading flat on the ground, is said to be an efficacious remedy in certain diseases; it is very common on the Cape hills in the winter months. The most important medicinal plants of the colony, the Aloes, are not found in the Cape district.

The Waxberry‡ grows in abundance on the sand hills which you cross in going to Hottentot Holland, and also on the sea-shore at Kamp's Bay and elsewhere; it is a shrub three or four feet high, with small, crowded leaves, and round berries, which are covered with a whitish, waxy crust, and look very like apothecaries' pills. This wax, like that of the American Candleberry Myrtle,§ is not unfrequently used in the country for making candles; but it does not burn very well.

The only native fruit of the colony, as far as I am aware, (if, indeed, it deserves the name of a fruit), is that called the Hottentot Fig,‖ which makes a tolerable sweetmeat, but has otherwise little or no merit. The plant to which it belongs has thick, fleshy, bright-green leaves, and large, straw-coloured flowers, and spreads widely over the ground, forming extensive patches of a lively verdure. It is the most common of all plants, not only in the neighbourhood of Cape Town, but in the colony generally, extending quite to the eastern frontier; I saw it also growing abundantly in the island of St. Helena; but there, no doubt, it has been introduced. Some other species of *Mesembryanthemum* occur on the Cape hills and flats, but, in general, it may be remarked that succulent plants are much less numerous in this part than in the interior of the colony. It is probable that the leaves of the Hottentot Fig might be used as a substitute for spinach, since it is nearly related to the well-known New Zealand spinach;* but I am not aware that any trials have been made.

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* Harvey's Genera of S. African Plants.

† *Arctopus echinatus.*

‡ *Myrica cordifolia.*

§ *Myrica cerifera.*

‖ *Mesembryanthemum edule.*

The shrub called the Cape Gooseberry, which bears a pleasant, acid fruit, is supposed to be a naturalized plant, and not a true native.

Pelargoniums (more commonly known under the name of Geraniums), are found in considerable numbers in the Cape peninsula; but the generality of them are far less handsome than what we are used to in gardens. Few plants have been more improved by cultivation. The finest kind is the *P. cucullatum*, a shrub with large purple flowers, which grows abundantly in most of the ravines and water-courses among the hills, generally mixed with the Lion's-ear,† an ornamental shrub of the Sage kind; the bright purple of the one, and the glowing orange of the other, produce a very rich effect.

The "Kloof," which I have already mentioned several times, is one of the best places for botanizing, within a walk of Cape Town. (note G) Another very favourable locality, is the eastern side of the Devil's Mountain, (note H) near the farther block-house: this face of the mountain is much less parched than that looking towards the town, and produces a great number of peculiar plants. Of the botanical riches of the Flats, and of the upper part of Table Mountain, I have already spoken. The mountains behind Simon's Town (note I) are well worthy of the attention of a botanist; they abound with Heaths and *Proteas*, which generally delight in the most barren soil; and many plants which flourish on the top of Table Mountain are here seen at a much lower level.

A great number of curious plants, from all parts of the colony, are cultivated in the rich and interesting botanic garden of Baron von Ludwig, a gentleman remarkable for his zeal and liberality in the promotion of science, in a country where it has but too few votaries. It is nevertheless to be regretted, that a public botanical garden, on an adequate scale, is not formed and supported by the government. Such an establishment did exist while the Cape was in the hands of the Dutch, but one of the earliest English Governors, I have been told, not seeing the *utility* of the thing, broke it up, and converted the grounds into paddocks for his horses.

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* *Tetragonia expansa.*

† *Leonotis Leonurus.*

The culinary vegetables of Europe succeed very well at the Cape, especially artichokes, which grow larger and finer than I have seen them elsewhere. I had heard much praise of the cultivated fruits, but I thought them overrated; it is true that the season was a bad one. The grapes, though good, are not equal to some I have eaten in Italy; the figs are moderate; and the oranges very inferior to those of Rio de Janeiro. The climate is too hot and dry for gooseberries and currants, but not quite hot enough (at least, it has not a sufficiently high average temperature) for the pine-apple; I believe Baron von Ludwig is the only person at the Cape who cultivates this "queen of fruits" with success. Thunberg says that the Banana did not thrive at the Cape in his time: it flowers every year in the gardens of Government House, and ripens its fruit, which, however, is not of so fine a quality as in Brazil. The *Loquat*, or Japan Medlar, succeeds very well, and bears plenty of fruit, which is something like a sweet, yellow plum, but of no extraordinary merit.

In the environs of Cape Town, you constantly see the great American Aloe cultivated, thriving as luxuriantly as in its own continent, and yearly sending up its magnificent flower-stems, which, when they first appear, strongly suggest the idea of asparagus raised for a Brobdignag table.

As I have devoted this chapter to the Botany of the Cape and its neighbourhood, I may introduce here some account of an excursion which, in company with my friend Harvey, I made to the Paarl, chiefly with the view of collecting plants. The Paarl Hill, situated in the district of Stellenbosch, between thirty and forty miles N.E. of Cape Town, is a detached ridge of granite, a few miles long, and of moderate height, running nearly N. and S., parallel to the much higher, and more rugged chain of the Drakensteen Mountains, from which it is separated by a wide and fertile valley. Its outlines are smooth and rounded, its sides covered with bushes, and its top studded with enormous round masses of naked granite rock, from one of which it is said to have derived its name, signifying "the Pearl." These rocky knobs, or protuberances, are of such a size, that on a clear day, they may plainly be discerned from the mountains behind Cape Town. At the foot of the hill, in the valley of the Berg River, lies the pretty village of Paarl, consisting of neat white houses, very widely scattered, intermixed with gardens, vineyards, corn-fields, and rows of pine and oak trees. The Berg River, a considerable stream, (though its source is not far distant), winds through the valley in a northerly direction, its banks clothed with a thick jungle of various handsome shrubs. It divides the district of Stellenbosch from that of Worcester, and falls at last into St. Helena Bay, between the 32nd and 33rd parallels of S. latitude.

The Drakensteen Mountains are a part of that great chain of mountains which, divided into several subordinate ranges, and distinguished by various local names, extends northward from Cape Hangklip, on the east side of False Bay, through the districts of Worcester and Clanwilliam, separating the climate and productions of the coast from those of the interior. A few miles S. of the Paarl, a branch juts out to the westward from this chain, dividing the valley of the Paarl from that of Hottentot Holland. The village of Stellenbosch lies just under this branch, and in the angle between it and the principal chain of mountains is the Fransche Hoek pass, leading to Worcester. The Drakensteen Mountains present bold and lofty escarpments to the valley of the Berg River, and it is evident, from their forms

[illegible]
[illegible] stone [illegible]
[illegible]
[illegible]
[illegible] mixed [illegible]
[illegible] twisted [illegible]
[illegible]

[illegible] exceedingly [illegible]
[illegible] times [illegible]
[illegible] under [illegible] peculiar [illegible]
[illegible] be [illegible]
[illegible] *[illegible]nanus.* [illegible]
[illegible] on the sides of the [illegible]
[illegible] *[illegible]sima.* [illegible] *Drosera* [illegible]
[illegible] mos. [illegible]
[illegible] bright, red-like [illegible]
[illegible] large, purple [illegible]
[illegible] River, [illegible]
[illegible] The [illegible]
[illegible] the season when [illegible]
[illegible] pretty [illegible]

and there are some, particularly in the *Karroos* of the interior, which require, for their full development, circumstances that recur only after intervals of several years. Australia appears, by the accounts we have received, to be the country which, on the whole, resembles Southern Africa in its botanical peculiarities. Tropical America, with its grand and gorgeous masses of vegetation, produces a much stronger impression on the spectator than the Cape, even in the height of its flowery beauty; but it does not probably yield a greater variety of plants, space for space, and its productions are far more difficult to collect. You are not tantalized at the Cape, as you so often are in Brazil, by clusters of splendid blossoms and strange fruits hanging high above you, and baffling all attempts to reach them. But I do not know that in any part of the world I have seen a more beautiful display of wild flowers than on the higher Alps of Switzerland and Savoy. The rich emerald-green turf of those elevated regions, glowing with the crimson Rhododendron and enamelled with the bright blossoms of the Gentians, Saxifrages, Crocuses, and hundreds of other gay and delicate flowers, present a still more delightful spectacle than the hills and sands of the Cape in the heights of the bulb-season. All the beauties of the vegetable kingdom seem on the Alps to be, as it were, in miniature.

If, with reference to the geographical distribution of plants, the globe be divided into botanical provinces, Southern Africa will be one of the most distinct and strongly marked of these, although (as I shall afterwards shew), its peculiarities seem gradually to shade off, as you proceed north-eastward, into those of the tropical regions. It would seem that the distribution of plants, and that of animals are not governed by precisely the same laws: Le Vaillant, Dr. Smith, and Mr. Swainson, have shown that very many birds are common to Senegal and the Cape colony; whereas I believe that these two countries possess not a single flowering plant in common, and scarcely even a genus of plants, with the exception of such as are universally diffused. Dr.

Brown, the highest of all authorities on botanical questions, did not find, in the collections from Congo, a single example of any of the tribes most characteristic of the Cape vegetation.

NOTES TO CHAPTER I.

(A) Here, in particular, is found a rare and curious moss, first discovered by Mr. Harvey, and named by him *Wardia hygrometrica*.* It grows plentifully on the steep face of this rock, where it is constantly wet. Harvey found it also in a stream on the opposite side of the Table Mountain, and at the Drakensteen waterfall, in the district of Stellenbosch.

(B) The following are some of the most remarkable plants which I gathered on and near the summit of Table Mountain, in my first ascent:

Disa grandiflora, *D. ferruginea*, *D. tenuifolia*, *Gladiolus brevifolius* (of Jaquin), *Penæa mucronata* (very plentiful), *Hermas villosa*, *Crassula coccinea*, *Erica glutinosa*, *E. coccinea*, *Tecdia lucida*, *Osteospermum ilicifolium*, *Sphenogyne nudicaulis*, *Todea Africana*, *Schizæa pectinata*.

In November, I collected there:

Dilatris viscosa, *Erica sexfaria*, *E. spumosa*, *E. petiolata*, *E. brevifolia*, *E. tubiflora*, *Aulaya Capensis* (of Harvey), *Grubbea rosmarinifolia*, *Pterygodium* most common mosses on the British mountains,) and I gathered also *Orthotrichum*—? *Hedwigia Humboldtii* (?),[*] *Bartramia arcuata* (?),[*] *Trichostomum polyphyllum*, *Jungermannia ochroleuca* Spr., and a species closely related to *Jungermannia Sphagni*. *Sticta crocata*, one of the handsomest of lichens, grows plentifully and in very fine condition in the gorge of the mountain. In the winter months, *Glyphocarpa Capensis* is to be met with in many places, in the ravines of the mountains, on moist banks and rocks, and *Phascum nervosum* on the stiff clay soil at the foot of the Devil's Mountain.

(D) The following should be added to what I have said of the granite of the Cape:

In the ascent of the Kloof, from the Cape Town side, more than one dyke of some trap rock, much decomposed, and of almost an earthy appearance, but distinguishable by the dark colour, may be observed traversing the granite; and very soon after you begin to descend on the other side, a remarkable dislocated dyke of the same substance is seen in the steep bank on the right hand. It appears as if it were broken across, and the one half moved sideways out of the line of the other, but still preserving the same direction. The rock of which this dyke is composed is of a greenish black colour, and presents an appearance of concentric spheroidal concretions, not uncommon in the old igneous rocks.

(E) It is a remarkable circumstance, observed both by Mr. Harvey and myself, that no mosses or lichens grow on even the oldest trunks of the Silver-tree.

(F) Along the margins of the little streams which intersect the Flats in various directions, and of the valleys or pools, the prevailing shrubs are *Cliffortia strobilifera*, *Erica concinna*, *Psoralea pinnata*, *Leucadendron floridum* R. Br., a *Brunia*, and one or two species of *Rhus*. On the dryer ground, there is vast abundance of *Erica corifolia*, *E. ramentacea*, *E. racemifera*, *Blæria ericoides*, *B. muscosa*, *Cliffortia ternata*, *C. juniperina*, *Borbonia lanceolata*, *Staavia radiata* (?), *Gnidia*—? *Mimetes purpurea* R. Br., *Struthiola erecta*, and various *Restiaceæ*.

Among the almost innumerable plants of the Cape Flats, the following deserve notice for their beauty, rarity, or peculiarity of structure:

Bartholina pectinata.
Disa barbata.
D. cornuta.
Holothrix Harveyiana (Lindl.)
Cymbidium plicatum H.
Satyrium corifolium (near Muysenberg.)
Roella ciliata.
Lobelia coronopifolia.
L. lutea.
Villarsia Indica, (in the pools of water.)
Chironia frutescens.
C. linoides.
Hyobanche sanguinea.
Harveya Capensis.
Oldenlandia Capensis, var.
Aristea cyanea.
A. pusilla.
Watsonia iridifolia.
Babiana ringens.
Protea cynaroides.
P. Scolymus.
P. mellifera.
Leucospermum hypophyllum.
Serruria Burmanni.

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[*] These two were in a barren state.

Cuscuta.
Passerina uniflora.
Cassytha filiformis.
Drosera cistiflora.
Viborgia obcordata.
Dianthus incurvus Th.
Sphenogyne tenuifolia.
Corymbium, 2 sp.

I do not mean that all these plants are confined to the Flats: several of them, on the contrary, are to be found in plenty on the hills and rough ground immediately behind the town, such as *Roella ciliata*, the two *Lobeliæ* comprised in this list, *Aristea cyanea*, and the *Cassytha*. This last, which is very common at the Cape, is a singular plant, approaching near to the Sweet Bay in the structure of its flowers, but in mode of growth and general appearance, resembling the *Cuscuta*, or Dodder; its slender, leafless, yellow, thread-like stems, spread far and wide over the bushes, and load them with a strange kind of web.

The *Lobelia (Parastranthus) lutea*, a very general plant in the environs of Cape Town, varies much, not only in size and in the direction of its stems, but in the form of its leaves, which, in a variety abundant on the Flats, are very narrow, and without the marginal teeth observable in the more usual state of the plant.

The *Drosera cistiflora*, one of the most beautiful of its tribe, is not a marsh plant like most of the other *Droseræ*, but remarkably indifferent to soil and situation, growing in dry as well as in wet places, on hard clay and gravel as well as on sand. *Drosera Capensis*, another handsome species, occurs frequently in swampy spots on the sides of Table Mountain; and there are others less conspicuous.

(G) The following are some of the interesting plants which are to be found in the Kloof and on the adjacent slopes of the mountains:

The northern slopes of the same mountain, towards the town, though more arid than the eastern side, nevertheless afford many curious plants, among which may be noticed the following:

Pterygodium catholicum, (grows also on the Flats).
Disperis villosa.
D. secunda.
Corycium orobanchoides.
Gladiolus gracilis.
G. alatus.
G. versicolor (?)
Geissorrhiza secunda.
Galaxia ovata.
Hermannia multiflora.
Mahernia grossularifolia.
Helichrysum crispum De C.
Helipterum gnaphaloides De C.
Ehrharta Mnematea.
E. bulbosa.
E. calycina.
Hydrocotyle Centella.
H. virgata, (also on the Flats.)
Erica Sebana.
E. Plukenetii.
Hallia alata.
H. imbricata (very common).
Oxalis tricolor.
Diosma rubra.

Some of the plants which may be considered most common in the neighbourhood of Cape Town are,

Cliffortia ruscifolia.
Muraltia Heisteria.
Dimorphotheca pluvialis.
Athanasia, sp.
Cotula, sp.
Lobelia (*Parastranthus*) *lutea*.
Leucadendron adscendens.
Sphenogyne, sp.
Cenia turbinata.
Calla Æthiopica.
Lobelia coronopifolia.

(I) Among the plants to be found near Simon's Town, may be enumerated the following,

Gladiolus Cunonia.
Diasia iridifolia Red.
Sparaxis bulbifera.
Cysticapnos Africana.
Heliophila arabioides B. M.
Erica spumosa.
E. Halicacaba.
Serruria hirsuta R. Br, and other sp. of that genus.
Mimetes Hartogii R. Br.
Gnidia pinifolia.
Helipterum speciosissimum Br.
Audouinia capitata Br.
Nemesia bicornis.
Sutherlandia frutescens.

(K) The following plants were in blossom on the Paarl hill when I visited it in August 1838.

Diosma (*Adenandra*) *marginata*.
Drosera sp.
Geissorrhiza excisa.
Hermannia alnifolia.
H. althæifolia.
H. flammea.
Leucospermum lineare R. Br.
L. grandiflorum R. Br.
Serruria pinnata R. Br.
Dodonæa sp.
Hydrocotyle calliodus De C.
Eustegia filiformis.
Sparaxis bicolor.
Hemimeris montana.

In the low sandy grounds between the foot of the hill and the river, grew

Heliophila pusilla, and other sp. of that genus.
Hemimeris sabulosa.
Polycarena gilioides, Benth.
Nemesia barbata, and other sp.
Nycterinia sp.
Indigofera procumbens.

The jungle which clothes the banks of the Berg River, consists of several species of *Rhus*, *Cliffortia*, *Celastrus*, and *Rubus*, very large *Restiones*, *Brabeium stellatum*, *Metrosideros angustifolia*, *Capraria lanceolata*, and *Podalyria calyptrata* (or *styracifolia*) in a very luxuriant state.

ADDENDA.

Some of the Cape Heaths, like those of our own country, grow in large masses or societies, covering considerable spaces of ground; such are *Erica corifolia*, *E. ramentacea*, *E. racemifera*, *E. flexuosa*, *E. baccans*, *Blæria muscosa* and *ericoides*. Others, such as *Erica mammosa*, *E. cerinthoides*, *E. Plukenetii*, *E. Sebana*, though sufficiently common, grow in a scattered manner, singly among other plants; and there are many species that are to be met with but very sparingly, here and there in the clefts of rocks.

I cannot admit the correctness of Dr. Lindley's disparaging account of the Cape Heaths in their native state. It is true that in a well-stocked greenhouse you may see a greater variety of species in a small space than you ever do at the Cape; their mode of growth, too, may be somewhat more neat and trim; but the flowers are as beautiful and as plentifully produced in a wild state as I have ever seen them in cultivation.

Coniferæ Juss., what he considered, from his then imperfect materials, one species of *Phyllocladus*, two of *Podocarpus* and four of *Dacrydium*. Recent investigations in that island, especially those of Mr. Colenso, still resident in the Bay of Islands, (where his kindness and attention to the Botanist and other officers of H. M. Discovery-Ships, Erebus and Terror, when they wintered there in 1841, demand, even in this place, our grateful acknowledgments), of Dr. Diefenbach and Mr. Edgerley, have contributed some additional species, and enabled us to describe more correctly those that have been previously noticed. My present object is to give a figure and brief description of the two mentioned at the head of this article, and I shall first notice the

THUJA DONIANA, *Hook.* (TAB. XVIII.)

Ramis compressis, foliis quadrifariam imbricatis late ovatis breviter obtuse acuminatis dorso carinatis, capsulis erectis ovatis profunde 4-valvibus, valvis oblongis dorso spina elongata subulata, duabus exterioribus quadruplo minoribus, seminibus bialatis, ala altera maxima.

Dacrydium? plumosum. *Don, in Lamb. Pin. ed. 2. App. All. Cunn. Bot. of N. Zeal. in Tayl. Ann. of Nat. Hist. vol.* 1. *p.* 213.—*Kawaha* indig.

HAB. Forests near the Bay of Islands, &c. *Bennett, A. Cunningham, Colenso*, ("only on the high ridges of hills"). Near Hokianga; *Edgerley*, in forests.

Arbor 60-70-pedalis (*Bennett, Edgerley;* 30-pedalis, *All. Cunn.*) Truncus diametro 2-3½ pedalis. Rami teretes, denudati, cortice fusco (epidermide deciduo) tecti; vel foliis sparsis vetustis squamosi: ramulis omnibus distichis, compressis, dense foliosis. Folia parva, arcte imbricata, quadrifariam inserta, late ovata, breviter sed obtuse acuminata, dorso carinata. FLORES, *masc.* et *fœm.* mihi ignoti. FRUCTUS: capsulæ solitariæ, erectæ, sessiles, ex apicibus ramulorum brevium, ovatæ, obtusæ, semiunciam longæ, demum in valvis 4 inæqualibus dehiscentes; valvis 2 exterioribus minoribus, 2 interioribus quadruplo majoribus, omnibus dorso spinula foliosa horizontali, fere semiunciam longa, donata. Semina 2, ovata, bialata; alis inæqualibus; unica superiore maxima appendiculiformi; altera inferiore angusta.

This seems to have been first made known to European botanists by Mr. George Bennett, who brought specimens from New Zealand to Mr. Lambert, and spoke of the tree as attaining "a height of from 60 to 70 feet, with a trunk from eight to ten feet in circumference. The timber is of a red colour, and of an excellent quality for either plank or spar. No gum-resin is produced by this tree. The natives informed me that it derived its name *Kawaha* from the branches growing out regularly on each side of the tree." Mr. Yates says of it, that the wood is elegantly grained, close and heavy, and would make beautiful picture-frames if they were required of a deep stain, but that it is not much known, and has never yet been sought after to be applied to any useful purposes. The fruit seems to be rare, for it was unknown to every collector till Mr. Edgerley brought me fine fructified specimens in the summer of 1842, from which the accompanying figures were made. It is singular that Mr. Don and Mr. A. Cunningham should refer this plant, whose habit is so completely that of a *Thuja*, to *Dacrydium*. Of the four species placed under *Dacrydium* by Mr. A. Cunningham in his Botany of New Zealand, only one truly belongs to that genus.

TAB. XVIII. Thuja Doniana. Fig 1. capsule; f. 2. the same expanded; *f.* 3. ditto, the seeds removed; *f.* 4, 5. seeds: all more or less magnified.

PODOCARPUS TOTARA, (TAB. XIX.)

Foliis undique patentibus lineari-lanceolatis pungenti-acutis basi angustatis uninerviis utrinque (siccitate) obsolete striatis, subtus obscure glaucescentibus, fructibus axillaribus solitariis brevi-pedunculatis.

Podocarpus? Totara, *Don in Lamb. Pin. ed.* 2. *App.* (*excl. syn.*) *All. Cunn. Bot. of N. Zeal. in Tayl. Ann. of Nat. Hist. v.* 1, *p.* 212, (*excl. syn. Dacrydii taxifol.*)

HAB. New Zealand: the northern island. Banks of the Kowa-Kowa: and, no doubt, in various other localities not specified by collectors, from the borders of rivers to the summit of Tongariro amid eternal snows. *Bennett, Allan Cunningham, Colenso, Diefenbach, Edgerley.*

Arbor excelsa. Truncus 80-90 pedalis; diametro 2-6 pedalis (*All. Cunn.*, 5-7 ped. *Bennett*); cortice fibroso; ligno levi, rubro, tenaci. Ramuli teretes, (siccitate) striati, flavi, dichotome divisi, vel sæpissime terni, foliis undique tecti. Folia pleraque horizontaliter patentia, unciam sesquiunciam longa, sæpius aversa, lineari-lanceolata, rigida, acutissima, pungentia, obsoletissime striata, basi angustata, supra flavo-viridia, nervo medio impresso, subtus pallida etiam glaucescentia, nervo medio parum elevato, margine recurvata. PLANTA *masc.*: Amenta longitudine foliorum, axillaria, solitaria, sessilia, cylindracea, (siccitate) fusca, basi squamulis 3-4 viridibus fimbriatis vacuis. Antheræ numerosæ, arcte imbricatæ, late ovatæ, apice laciniato-dentatæ, superiores minus dentatæ, breviter stipitatæ, loculis duobus marginales extrorsum verticaliter dehiscentibus. PLANTA *fœm.*: Pedunculi solitarii, axillares, nudi, vix lineam longi, superne in receptaculo carnoso, primum oblongo demum subgloboso pisiformi 1-2-floro dilatati. Fructus junior oblongus v. ellipticus, maturus magis ovatus, 1. v. non raro 2 ex eodem receptaculo.

The first account I find of this noble tree, is in a letter of George Bennett, Esq. to Mr. Lambert, (appended by this gentleman to the last edition of his splendid work on Pines), "On the Coniferous Plants of New Zealand," where it is said that:—"it is an unpublished species of *Podocarpus*, called by the natives, *Totara*. It attains the height of 80 or 90 feet, and a circumference of 15 and 20 feet, and is considered the next in diameter to the *Kowri*. The timber produced from it is of a reddish colour, becoming darker from age and exposure; the wood is of excellent quality both in plank and spar, and is held in high estimation among the natives, particularly for the construction of their canoes, its lightness and durability causing it to be highly valued and preferred before all others. I do not observe any gum-resin exude from the tree, but the specimens of the tree I collected, when dried, had a very fragrant smell, which was not perceived in them when recently gathered. I noticed this tree in abundance on the banks of the river Kowa-Kowa, as well as on the lofty hills in the vicinity. The value placed on it by the natives is sometimes the occasion of quarrels, terminating in bloodshed, if it is cut down by any excepting the party by whom it is claimed; for which reason, and that it might be known as belonging to certain individuals, a mark is placed on the tree, and it is then reserved until it has attained a sufficient magnitude for use; so that it is not unusual for the trees to descend from father to son."

Although I possess specimens from all the collectors above mentioned, I am not furnished with the means of stating the exact localities where they were respectively found. Mr. Bennett's were probably from the Kowa-Kowa river, Mr. Colenso's from the neighbourhood of the Bay of Islands. One of Dr. Deifenbach's, with leaves full 2 inches long, and some of them considerably falcated, is from Mount Egmont, while Mr. Edgerley's researches extended little beyond the neighbourhood of Hokianga. Mr. Colenso, in his letter to me, dated Paihia, Bay of Islands, July 20th, 1841, says when offering some remarks on a valuable set of plants he sent me from the summit of Tongariro, a very high and volcanic mountain near the middle of the island, where they had been gathered by a gentleman who resided at Rotorua, a mission station, about three days' journey from Tongariro; "some of these grew amid the eternal snows on the 'cloud-capt' top of the cone, from which place the adventurous explorer brought a Pine (*Podocarpus Totara*), with its root, fully in fruit, yet only 3 inches high. Its branches were brachiate and recumbent, and formed a circle of a foot in diameter."

The stations given by Mr. Allan Cunningham cannot all be depended upon, because that zealous botanist confounded the *Totara* with the *Dacrydium taxifolium* of Solander, which is the *Podocarpus spicata* of Brown.—(See Hook. Ic. Pl. v. 5. ined.)

In the Herbarium the most perfect flowering specimens, both from the male and female tree, are remarkable for their singularly yellow-green colour, especially on the upper side of the foliage, the under being paler, but greener, and inclined to glaucous. The fleshy receptacles in this and in all the New Zealand species of *Podocarpus* and the *Dacrydium* are coloured from orange to crimson, and they are all eaten by the natives; but those of the *Totarra* and *Remu* (*Dacrydium cupressinum*, Sol.) being small, are much less highly esteemed than those of *Podocarpus thujoides*, Br. (*Dacrydium excelsum*, Don).

TAB. XIX.—Podocarpus Totara. *Don.* Fig. 1, branch of a male, and *f.* 2, branch of a female plant, *nat. size; f.* 3, 4, leaves; *f.* 5, male amentum; *f.* 6, portion of the same with 4 anthers; *f.* 7, posterior, and *f.* 8, anterior view of an anther; *f.* 9, 10, 11, fruit, receptacles with their fruits (one or two from each receptacle) in different stages of maturity; *f.* 12, vertical section of the receptacle and fruit, showing the testa, inner membrane, nucleus, and embyro of the latter; more or less *magnified.*

Memoir to determine the use of POLLEN *in Natural Classification, by* JAMES ALDRIDGE, ESQ. M.D., *formerly lecturer on Natural History, now lecturer on Chemistry to the Park-Street Medico-Chirurgical School, Dublin, &c.*

(*With a Plate.* TAB. XX. A.)

ALL observers agree in acknowledging the high physiological importance of the pollen. Since the announcement by Grew of the masculine functions of the *attire*—an opinion previously hinted at by many—the necessity of this organ to fecundation, has gradually attained an universal recognition; and if any difference at present exists among botanical physiologists, it is whether it should not be considered indispensible to *all* reproduction amongst plants. Guillemin, in 1824, moreover, asserted its importance in vegetable classification; he felt satisfied that the nature of the grains of pollen is the same in each natural family of plants. Under these circumstances, it is strange that the taxonomic value of this organ should not have met with more attention; but it is not the less true, that except in some rare instances, it has been totally overlooked in classification. Doctor Lindley, in his valuable and excellent work on the Natural System, has described the nature of the pollen, in only one among one hundred and nineteen orders in his first sub-class of exogenous plants, "Polypetalæ;" and again, among forty-three orders, exclusive of sub-orders, in his second sub-class, "Incompletæ," there is but one in which the kind of pollen is mentioned; and, although in "Monopetalæ," characters derived from the pollen are more frequently given, they are sometimes incorrect, and at others, unimportant, from the subordinate points of view under which they have been examined. Thus, in Gentianaceæ, the pollen is said to be three-lobed, or triple, a character by no means constant; and in other cases we are told that the pollen is smooth, or oval, or elliptical—circumstances which we shall find to be of small consequence in classification. No blame can attach to Doctor Lindley, or other systematic writers, for such inaccuracies; they result from a defect in the science of Botany, which it is the object of this paper partly to supply.

Before we enter into a consideration of the uses of pollen in vegetable classification, it will be necessary for us to ascertain the true principles which should guide us in this department of botanical science. And this appears the more necessary, inasmuch as at this day, an empirical method seems to be too commonly pursued, in the multiplication of genera and families. To prevent misunderstanding, I shall, therefore, state my views, which will be found to differ in little, save arrangement, from those put forward by MM. Antoine de Jussieu and De Candolle. To these eminent men we principally owe this noble application of logic; and sheltered by their reputations, fearful of my own judgment, I present to the reader the following theory of classification.

It being granted, that all vegetables perform the same functions (nutrition and reproduction); that vegetables are composed of organs; that those functions are performed by these organs; that there are most commonly many organs engaged in the performance of the same function, and that this combination may be called an *apparatus;* that the organs in an apparatus differ from each other; and that in different vegetables, the organs engaged in the performance of the same function are sometimes similar, sometimes dissimilar: it is still necessary for the purposes of classification, to admit these two other postulates, namely, that the different organs in an apparatus are some more, some less essential to the performance of its special function; and again, that the same organ possesses different attributes, or more correctly, *abstract modes*, such as position, form, size, colour, etc.; and that these modes are some more, some less essential to the performance of the function, to which the said organ is subservient.

Thus, the function of reproduction requires for its perfection, a resemblance between the parent and offspring; and this resemblance more immediately depends on the position of the embryo, than on its form (which is the result, more or less, of the former), more on its form than on its colour.

I must pray the indulgence of my readers, for defining, occasionally, some terms, as my object in doing so is to avoid the possibility of misconstruction. For this reason, I may be permitted to define *a character* in vegetable taxonomy, as *a term applied to an organ considered in an abstract mode*. Thus, an erect embryo; a funnel-shaped corolla; an ovate leaf; these are characters.

A moment's reflection will show, as a result necessarily following from the preceding postulates, *that some characters are more some less essential to the performance of a function.*

Another definition, which it is here necessary to supply, is the following: The *conditions of existence* are the mutual dependencies which exist between the characters of the same organ; or between different organs in the same apparatus; or between different apparatusses.

I need, in this instance, no apology for introducing the following passage from the " Ossemens fossiles" to elucidate the meaning of the "conditions of existence." No naturalist can be too familiar with the writings of Cuvier;—speaking of himself as contemplating the bones which he had procured from the quarries of Paris, he says. " I was in the situation of " a man who had given to him, *pêle mele*, the mutilated and incomplete " fragments of a hundred skeletons, belonging to twenty sorts of animals, " and it was required that each bone should be joined to that which it " belonged to. It was a resurrection in miniature; but the immutable " laws prescribed to living beings were my directors. At the voice of " comparative anatomy, each bone, each fragment, regained its place. I " have no expressions to describe the pleasure experienced in perceiving " that, as I discovered one character, all the consequences, more or less " foreseen, of this character, were successively developed. The feet were " conformable to what the teeth had announced, and the teeth to the feet; " the bones of the legs and the thighs, and every thing that ought to re- " unite these two extreme parts, were conformable to each other. In one " word, each of the species sprung up from one of its elements. Those " who will have the patience to follow me in these memoirs, may form " some idea of the sensations which I experienced in thus restoring, by " degrees, these ancient monuments of mighty revolutions. This volume " will afford much interest to naturalists, independent of geology, show- " ing them, by multiplied examples, the strictness of the laws of co-ex- " istence, which elevate zoology to the rank of the rational sciences, and " which, leading us to abandon the vain and arbitrary combinations that " had been decorated with the name of *systems*, will conduct us at last to " the only study worthy of our age—to that of the natural and necessary " relations, which connect together the different parts of all organised " bodies."—These considerations apply as well to plants as animals.

This leads us to another postulate; let it be granted that the conditions of existence require a constant relation between characters the most essential, and those less essential

an apparatus; and likewise a constant relation between
aracters equally essential in different apparatusses in the
me individual.

This postulate is not difficult to admit; its truth affords one of the
ncipal charms to physiology. Thus, the nature of the inflorescence regu-
es the form of the corolla; when the one is terminal, or furnished with
g and remote peduncles, so that the flower is equally pressed on and
ally nourished, the corolla is regular; whereas, if the inflorescence be
hickly congested spike, umbel, or capitulum, the part most pressed on
d least nourished, is least developed, and the flower is irregular. Even
en the connection of cause and effect is not perceptible, the operation of
conditions of existence is not the less marked; thus, in flowers truly
isexual, the perianth becomes masked; in this case, although the proxi-
ate cause is concealed, the final cause is evident, inasmuch as the pre-
nce of a perianth in unisexual flowers would materially interfere with
undation. Again, in many instances, we observe a constant co-exist-
ce of characters, where our imperfect knowledge is insufficient to reveal
us either the proximate or final cause of this coincidence. Thus stomata
d spiral vessels always co-exist, but wherefore we do not know.

This postulate, however, not only requires us to admit a constant rela-
n between characters of unequal importance in an apparatus, but also
tween characters of equal importance in different apparatusses. Now,
servation likewise proves the truth of this position; for do we not see
nearly constant co-existence of a monocotyledonous embryo with an
dogenous stem; a dicotyledonous embryo with an exogenous stem;
ked ovules, with the elongated cellules studded with glandular disks?
and I might quote many coincidences of a like nature.

If the foregoing postulates be admitted, we can found on
em the following propositions:

st.—A reunion of similar apparatusses agreeing in the most
essential characters, is a reunion of apparatusses having a
constant relation in less essential characters.

For we have already granted that an apparatus is a collection of organs
gaged in the performance of the same function; therefore the appara-
sses of different vegetables that are for the execution of the same func-
n in each is *similar* in that respect; and we have also admitted that
me characters are more, and some less important to the performance
a function; and that the organs engaged in the performance of a func-
n are sometimes similar, sometimes dissimilar; and that the conditions

of existence require a constant relation between characters the most essential and those less essential in an apparatus. Now:

> The less essential characters in an apparatus have a constant relation to the most essential;
>
> the most essential characters in *a b c d* (different vegetables) are identical;
>
> therefore, the less essential characters in *a b c d* must have a constant relation to each other; therefore, a reunion of similar apparatusses agreeing in most essential characters, must be a reunion of apparatusses, having a constant relation in less essential characters.

2nd.—A classification based on the reunion of apparatusses engaged in the performance of one function, is identical with a classification founded on the reunion of apparatusses engaged in the performance of another function.

The proof of this depends on the last proposition, and on a postulate which we have already admitted; for if there be a constant relation between characters equally essential in different apparatusses in the same individual; and if a reunion of similar apparatusses agreeing in the most essential characters, be a reunion of apparatusses having a constant relation in less essential characters, there must be a constant relation between classifications founded on organs performing different functions. For, if we suppose a classification founded on apparatus A, to be not identical with a classification founded on apparatus B, then either of these alternatives must be true; viz. that there is no constant relation or co-existence between any characters in either apparatus, which is contrary to the postulate; or, that some characters may have a constant relation and others not, which is contrary to the proposition. Therefore, these two classifications must be identical.

Thus, according to the latter proposition, *a classification founded on the organs of reproduction, is identical with a classification founded on the organs of nutrition.*

We require for our argument another postulate; let it be granted that characters have a greater extension in the direct ratio of their importance.

Thus, the existence of an embryo is more extensive than the presence of two cotyledons; the latter character is found in a greater number of species than the occurrence of a double perianth; and so forth.

3rd.—Groups formed by the combination of similar characters, will be greater in extension, and less in comprehension, in the ratio of the importance of the characters by which they are joined.

Let us suppose a group A united by a character of primary importance, and A divided into B and C by characters of secondary value; then B will contain the primary characters of A together with its own secondary characters, and C will contain the characters of A as well as its own secondary characters; so B and C, while less in extension than A, will exceed it in comprehension. For if B be equal in extension to A, then its secondary characters will be equal in extension to its primary, which is contrary to the last postulate.

From this proposition flows the following corollary:—*Groups of greater comprehension are subordinate to, or contained within groups of greater extension.* Another corollary is this:—*Different groups possess affinities towards each other, in the ratio of the less extension and greater comprehension of the group to which they are subordinate.* Another corollary is:—*That the characters which unite small groups, and separate them from neighbouring ones, co-exist, with a great number of affinities.* And lastly:—*We may judge by the considerable increase of mutual affinities, of the proper application of a character to the segregation of a small group.*

PROBLEM.—To arrange vegetables in groups, composed of elements having a greater number of constant resemblances amongst themselves than exist between them and the members of other groups: and to place these groups in relations more or less approached in the ratio of their mutual affinities.

Collect together all those plants that agree in characters of the highest value; sub-divide these by characters the next in importance; and again and again sub-divide these latter groups, according to the same principle, as long as characters can be found, whose application co-exists with an increasing multiplication of affinities; then permit the larger groups to approximate, at those minor groups whose segregation is founded on similar characters.

By uniting together those plants that agree in the most essential characters, we form, according to the first Proposition, a group possessing constant relations in less essential characters, and by Proposition 2nd, we have before ascertained that a classification founded on the organs of reproduction, is identical with one founded on the organs of nutrition. By the corollaries of the 3rd Proposition we have learned that groups of greater comprehension are subordinate to, or contained within groups of greater extension. It follows, therefore, that we can sub-divide the larger groups by characters of minor value; and again, different groups possess affinities towards each other in the ratio of the less extension and greater comprehension of the group to which they are subordinate; so that by sub-dividing the larger groups, by characters the next in importance, and repeating this process, as expressed in the solution of the problem, we form groups composed of elements having a greater number of resemblances amongst themselves than exist between them and the members of other groups. We judge by the considerable increase of mutual affinities, of the proper application of a character to segregation of a small group, and therefore we continue sub-division only so long as characters can be found whose application co-exists with an increasing multiplication of affinities. And lastly, as groups founded on similar characters (Proposition 1st), agree in a number of affinities, we can, by approximating the larger groups at those minor ones that are founded on similar characters, place the several groups in relations more or less approached in the ratio of their mutual affinities.

Having in the preceding pages endeavoured to determine the principles of classification in general, I will now direct myself to the consideration of the taxonomic value of the pollen. The value of a character being the compound value of the organ and of its abstract mode, it is necessary that we should consider these things separately; and first, as regards the physiological importance of the organ, the different methods proposed for determining this, reduce themselves to one, viz. its extension; the organ most generally present, must be considered as the most essential. Now, tried by this standard, the pollen must, at the least, be of equal value with the embryo; for it is notorious, that all embryonate plants are phænogamic. But if the observations of M. Corda be received, the pollen is of still greater importance: for this inquirer states it to be the origin of the embryo. He says that in *Coniferæ* he has observed the pollen-tubes penetrating the nucleus of the ovule to the very bottom, where they discharge a matter that becomes transformed into the embryo. And again, Fritzche, the latest and most accurate observer, inclines to consider the globule in *Chara* as an anther. And the general tendency among physiologists appears to be, at present, to regard the spores of cryptogamic plants as more analogous to grains of pollen than to seeds.

This opinion would lose much of its probability, did we observe the same gradual deterioration in male organs as we do in female. If it were admitted that the club-shaped threads surrounding the spores in *Equisetum*, are depauperated stamina, we might then contemplate without surprise the disappearance of this sex in simpler vegetables. But there is no reason for regarding these filaments (which when placed in diluted acid, coil themselves into a helix, sometimes around the theca, sometimes distinct), as allied to stamina, any more than we can impute a masculine character to the spiral coverings of the nucleus in *Chara*, to the elaters of *Marchantia*, or even to the spiral circumference of the frond entangling the clavate spores in *Chorda*. No, we find, in place of degeneration, the stamina and pollen as well developed in the meanest grass as in the lordly oak; and it is a thing certainly opposed to the ordinary laws of organization, this alleged sudden disappearance of an important organ. It is otherwise with the pistil and seed. The embryo, from being dicotyledonous, with distinct and easily demonstrable parts, loses, as we descend in the scale, one of its seed-lobes; becomes fused into an undistinguishable mass, and leaves an abundant albumen unconsumed, from its deficient development. The male, amongst all organized beings, is the most developed, and it is difficult to believe that this sex should be less necessary to organization than the female.

But whether we consider the embryo as being already existent in the ovule, and called into efficient growth by the stimulating influence of the pollen, or that it is formed out of the contents of the latter, sometimes requiring an *especial* soil—the ovule—for its development, and sometimes, as in the case of spores, capable of expanding itself in the water, or on naked rocks, or in the earth, independent of an organized pabulum; in either case, it is plain that the pollen possesses an equal, if not a greater, physiological importance as the embryo.

The importance of a character cannot, however, always be inferred from the physiological value of the organ. The consideration of the importance of the several modes becomes a chief element in this calculation. Now, the colour of the embryo is a character of very little value, being different in many allied species, and sometimes in the same individual. The number of grains of pollen contained in the anther-cell, is likewise an unimportant character, except in *Asclepiadeæ*, where, as I believe, and as I have elsewhere endeavoured to prove, the so-called pollen *masses*, are actually single grains.

The figure of the pollen is of greater consequence, but still, not of so much as some writers have imagined. Thus, some genera of *Proteaceæ* have triangular, others oval pollen; in *Fumaria* the pollen is botryoidal, in *Corydalis* spherical; in *Villarsia* it is triangular, in *Gentianella* oval; in *Ranunculus*, *Adonis*, *Anemone*, etc. it is spherical; in *Delphinium*, *Aquilegia*, *Aconitum*, *Helleborus*, etc. it is elliptical; in *Anchusa*, *Symphytum*, *Cynoglossum*, *Lithospermum*, etc. it is panduriform, or consisting of two equal spheres united together, and contained within a common membrane; in *Borago* it is spherical; while in *Onosma echioides* it consists of a larger sphere with a smaller one attached—a form evidently intermediate between the other two. In the nearly allied *Heliotropes*, again, it is elliptical. Not only does the form sometimes differ in neighbouring genera and species, but it is observed to vary, at different epochs, in the same plant. Thus, I have found the pollen of *Oxalis*, oval at the instant of placing on the object-glass, almost immediately to become spherical; and conversely, the pollen of *Hippuris*, spherical in the anther-cell, changes to a quadrangular outline upon removal. The same thing takes place in *Rumex acetosa*; while in *Polygala vulgaris*, it is quadrangular in the anther-cells, but becomes rapidly round, upon exposure to air. The pollen-grains of *Solanum* and *Atropa*, under similar circumstances, instantaneously change from spherical to elliptical.

The alterations in figure, which the pollen undergoes by means of re-agents, have been long since noticed.

As regards the structure of the pollen, we possess no characters of high value. Fritzche classifies this organ, according as the grains are possessed of one, two, three, or four membranous envelopes. But, in the family of the *Fluviales*, *Zostera marina* and *Najas major* have only a single integument (the Intine), while *Ruppia maritima*, likewise, has an Exine; and the existence of many integuments separates the *Onagrariaceæ* from all their allies. I have shown, in the Journal of Botany for June, 1841, that the exine frequently consists of two parts, a proper membrane and certain appendages upon its surface. The pressure of these latter was regarded with undue respect by Guillemin, who considered their existence of sufficient importance to divide not only families, but classes from each other. But I find that *Centaurea* has a smooth pollen, while this organ in the remaining *Compositæ* is hispid; and those of the *Ranunculaceæ* that have spherical pollen, have the exine coated with appendages, while in those with elliptical pollen, it is smooth. I may remark in this place, nevertheless, that in a practical point of view, the translucency or opacity of the exine, is a character of high value.

Another character that is worthy of remark, is the compound nature of some pollen. I do not here allude to what are called *pollen masses* in the *Orchideæ*. These consist of the "pollen grains," properly so called, united together by a cellular connection. It is in the *Listera ovata*, or some of those species of *Orchideæ*, that are said to have "powdery pollen," that the true nature of this organ can be best examined, where it will be found to consist of three, four, or five vesicles united together; these are rendered much more distinct by nitric acid, in which the exine peels off. If the pollen of *Orchis latifolia*, or *maculata*, be examined when the flower is very small (the spire being not more than one-fourth of the length from the summit of the ovary to the apex of the unexpanded sepals), it will be found to consist of little triangular masses of a cellular structure, which are made darker by nitric acid. At a later period, these are connected together by a cellular growth, but are made sufficiently evident by gently tearing the pollen-mass in nitric acid. These compound pollen grains when ripe, are green, and formed of vesicles, some of which are transparent, others opaque. When these pollen grains are placed in dilute nitric acid, these vesicles, whose fovilla has now become opaque and coagulated, are seen to be separated by translucent lines of loosened membrane. From hence it will be perceived, that the pollen grains of *Orchideous* plants are always essentially of the same nature.

The *Junci* have a compound pollen, consisting usually of three vesicles contained in a common membrane. The *Ericineæ*, likewise, have a compound pollen, having in *Erica* and *Arctostaphylos* four vesicles arranged in a tetrahedral figure; and in *Rhododendron* and *Azalea* three, on the same plane: these are not surrounded by a common membrane, but are furnished with threads projecting from their junctures, and very distinctly to be seen in the *Rhododendron*. The nearly allied *Epacrideæ* have a similar pollen.

The *Onagrariaceæ* have a highly remarkable and beautiful pollen, which can be most distinctly studied in *Epilobium hirsutum*; where the pollen grain appears to consist of three spindle-shaped vesicles united by filaments, and each bursting at both extremities, so that each grain has six points of dehiscence. In *Fuchsia*, it would appear as if these three vesicles were fused together so as to form a triangular mass with a single cavity and only three pores for bursting. It is worthy of notice, that in *Circæaceæ*, there is the same kind of pollen.

Although the compound nature of the pollen so well corresponds with affinities, as we have seen, yet there are some [illegible]ant exceptions, as well as in the other characters we [illegible]udied. Thus, in *Inga* and *Acacia* amongst the *Legu-*[illegible], the pollen is compound: and *Borago* amongst the

Boragineæ, has a simple pollen—an exception to the general rule.

The mode of dehiscence of the pollen is a character that has as yet been little studied. Fritzche, Möhl and myself have contributed somewhat towards the history of this function; and we have at least established, that it is a subject worthy of the most extensive examination. It is by means of re-agents, that the specific manner of dehiscence can alone be ascertained. The pollen bursting on the stigma, is acted upon by such variable forces, as to render a general rule impossible to be arrived at: and I have elsewhere shown, that the cause of rupture in such case is exactly identical with that which operates when the pollen, in the field of the microscope, is acted upon by dilute acids: it is, in truth, the acid secretion of the stigma which is the natural cause of its bursting. Moreover, to enable us to arrive at a general rule, it is necessary to employ a low magnifying power, so as to be enabled to examine a great number of pollen grains from a given plant at the same time; because, if we examine them singly, we cannot hope to catch the type of their dehiscence.

I have not been able to cause the spores of any Acotyledonous plant to dehisce in diluted acids.

The grasses and sedges burst by a single organized pore in the exine; this was first observed by Fritzche.

I am satisfied that the greater number of Monocotyledons burst by a long slit or chink in the exine. This is the case in the *Aroideæ*, *Typhaceæ*, *Smilaceæ*, *Colchicaceæ*, *Liliaceæ*, *Asphodeleæ*, *Amaryllidaceæ*, *Irideæ*, *Commelineæ* and *Butomeæ*. In consequence of this method of dehiscence, the fovilla, after escaping, retains its form, either oval or spherical.

The pollen of all Dicotyledons, perhaps with the exception of the *Coniferæ* and *Cycadeæ*, burst by pores. I am aware that this statement is contrary to the opinion of Fritzche, who divides the pollens with double membranes, into those with and without organized openings in the exine. But he has himself figured appearances on the exine, which closely resemble organized openings, such as the wrinkles in the pollen of *Cruciferous* plants; the six-sided reticular spaces in *Martynia* and *Catalpa*; the spiral bands in *Thunbergia*; bands crossing each other in *Passiflora*, &c. And what renders the absence of organized openings in such plants more than suspicious, is that by this character he separates genera belonging to the same family; thus, in the *Acanthaceæ*, he represents *Thunbergia* as destitute of organized openings, and *Justicia*, *Ruellia* and *Eranthemum* as furnished with them. Believing as I do, that the tubular appearance of the *boyau* is produced by the protrusion of the coagulated fovilla through a minute orifice, I am led to consider the formation of this thread-like process as sufficient evidence of porous opening. In casting my eye over the notes of 440 observations of different kinds of pollen, when dry, when placed in water, and when immersed in diluted acids, I only find 19 where I could not produce dehiscence, and of those instances, some were of species belonging to *Salvia*, *Anchusa*, *Lolium*, *Rhododendron*, *Plantago*, *Reseda*, *Spiræa* and *Achillæa*, and must have been accidental, as I have on other occasions caused them to protrude *boyaux*.

many pores; when translucent, we find but three openings. Lastly, the observation of neighbouring genera will often enable us to decide; thus *Geranium* commonly bursts by three pores, but in *Pelargonium* we find many. When the pollen of this last genus is placed in water, the intine, becoming swollen by absorption, protrudes under the form of numerous vesicles, through the openings of the exine, but shortly some two or three become much enlarged, the others disappear, and the large ones (if acid be added) becoming opaque, eventually burst, permitting the escape of the fovilla. Sometimes pollen with indefinite, and other with definite orifices, are found in the same family, as in the *Ranunculaceæ;* and it is remarkable, that the *Alismaceæ*, so similar in many respects to *Ranunculaceæ*, should agree with it in the mode of dehiscence of its pollen, while it differs, in the same respect, from all other monocotyledonous plants.

We have now considered the pollen in its most remarkable points of view. We have found that its most important modes are those connected with dehiscence, complexity or simplicity, opacity or translucency of exine, and figure. We have not taken into account the curious modifications which the appendages of the exine present. The variously organized spines and reticulations on the surfaces of pollen, so beautifully depicted by Fritzche and Möhl, require an exceedingly high magnifying power for their examination, and are useless for the purposes of classification. The characters we have studied, have not been found invariable: on the contrary, they are each subject to exceptions. Are we therefore to discard them from Taxonomy? No, for in this respect, the pollen does not differ from other organs. If we examine the different characters hitherto employed in classification, we shall see them all liable to variation. Thus, amongst plants classed as embryonate, the *Rhizantheæ* have no embryo, and *Caladium* has not, more than the nucleus of *Chara*, a distinct point of germination. If we divide embryonate plants by the number of their cotyledons, we find wheat with two cotyledons, amongst Monocotyledonous plants; and the *Piperaceæ* with one cotyledon, and the *Cuscuta* with none, among Dicotyledonous allies. If we look, with De Candolle, rather to the position than to the number of cotyledons, we see the *Trapa natans* with two unequal cotyledons, one of which is stipitate, amongst plants whose seed-lobes are opposite and equal. If we take as characters the exsertion of stamina, how often shall we be forced to regard plants as perigynous, rather from their affinities than from their organization? If we make hermaphrodism or diclinism a ground of classification amongst Dicotyledonous plants, how are we to dispose of the *Cucurbitaceæ*, the *Pistiaceæ*, the *Mimoseæ*, the *Ulmaceæ* or the *Piperaceæ?* If the number of the floral envelopes, how are we to arrange the genera *Glaux*, *Anemone*, or *Sanguisorba?* If we take into account the syn, or apo-petalous nature of the corolla, what shall we do with *Cucurbitaceæ*, *Plumbagineæ*, or the genus *Ornus*?

Characters taken from the organs of nutrition are equally liable to exceptions. Thus, the stem of a grass, or rush, is a very different thing from that of a palm; and if we cannot include the former with Endogenous plants, how much less can we invent a definition of an Exogenous stem, which will embrace the description of *Nepenthes* or of *Aristolochia!*

The truth is, that in the study of organized beings, we can only reach properties, the effects of unknown causes, whose essences will for ever remain concealed. This is always the case when man studies creations whose origin has been external to his own mind. And, thus it is, that syllogistic reasoning becomes excluded in the study of natural phenomena; because, as we cannot form an unexceptionable rule, it is impossible to draw a particular deduction; at least, with certainty, although we may with probability. When men's thoughts act on the creations of their own intellect, the case is different. The mathematician defines points, lines, and circles; he finds that certain properties are the necessary results of these definitions, and he plumes himself on what he conceives to be discoveries. He applies these principles to the study of the heavenly bodies; he finds their motions, in a great measure, correspond to the results of his previous speculations, and, in the exultation of his heart, he exclaims that "Calculation commands nature." But the boast is unfounded; calculation, at the best, only agrees with nature, and even in this chiefest empire of the intellect's triumph, incongruities are discoverable. However, to eke out the limits by which calculation finds itself bounded in its applications to astronomy, nothing more seems necessary than to call to its assistance the immeasurable influence of fixed stars, no one knows how distant! and to fill all space with an ether, no one knows how subtile!

In Mathematics, the progeny of the human mind, there are general laws. In Astronomy, where the subject matter is independant of the human mind, these laws have to be modified. How much more is it difficult, not to say impossible, to draw right-lined distinctions among the subjects of Natural History, which, being present to our immediate observation, show us such numberless aspects, and whose actions are the products of many forces, interfering with and controlling each other.

Knowing, therefore, that in the natural classification of plants, we cannot hope for logical, but must remain contented with moral truth, let us apply ourselves to ascertain to what extent we may set the characters derivable from the pollen. And in this place it is necessary to observe, that no character is of equal importance in every group. Thus, in that very natural group of families, composed of the *Stylidieæ*, *Lobeliaceæ*, *Campanulaceæ*, *Goodenoviæ*, *Columelliaceæ*, and *Vaccinieæ*, which agree in being monopetalous dicotyledons with inferior ovaries, hilose radicles, central placentæ, fleshy albumen, definite stamina, compound ovaries, and numerous seeds, we find the distinctive characters in five out of six to be taken from the sexual organs; the *Stylidieæ* being gynandrous, the *Lobeliaceæ* syngenesious, the *Goodenoviæ* with indusiate stigmata, the *Columelliaceæ* diandrous, and the *Vaccinieæ* with horned anthers.

Again, in another group of twelve families, agreeing in being polypetalous dicotyledons, with hilose radicles, albuminous seeds, and parietal placentæ, we find three with superior ovaries, distinguished principally by the number in the parts of the perianth, the *Papaveraceæ*, *Fumariaceæ*, and *Violaceæ*; and among those with parietal ovaries, the *Homalineæ*, *Passifloreæ* and *Malesherbiaceæ*, separated by characters taken from the same organ. In the former instance, modifications of the sexual apparatus possess a high importance; in the latter, those of the floral envelopes. I might bring forward many other examples of the truth of this principle.

I will therefore proceed to examine the nature of the pollen in some of the most remarkable groups, for the purpose of ascertaining those in which it is of taxonomic value.

It being doubtful whether the pollen be present in Acotyledonous plants, I shall pass over this division of the vegetable kingdom without further remark.

In the Grasses and Sedges, the pollen is spherical, and opens by a single pore.

In Rushes, the pollen is spherical, consisting of three vesicles, contained in a common investing membrane.

In *Typhaceæ*, the pollen is variable in form, and bursts by a narrow orifice, so that the fovilla is discharged in a cylindrical mass.

Among the allies of the Lily, those monocotyledons that have perigynous exsertion, the same kind of pollen prevails, with the exception, as far as I know, of a single family (the *Alismaceæ*). The common form is an elliptical transparent pollen, marked with a dark central line when dry, which disappears with the escape of a bubble of air when placed in water, at which time it rapidly becomes spherical: it ruptures by a slit or chink, and when this takes place under acid influence, the external membranes peel off, and the fovilla remains more or less of the original form. Sometimes, this pollen is opaque, from the fovilla having been coagulated by acid, while still in the loculus of the anther.

In the *Irideæ* and *Amaryllideæ*, the pollen is the same as in the *Liliaceæ*.

In *Scitamineæ* and its allies, the pollen is very peculiar, quite different from the foregoing. As far as I have had an opportunity of examining it, it seemed spherical and hispid when dry, separated a diaphanous membrane from its surface when placed in water, and protruded three equidistant, or club-shaped masses when placed in acids.

In *Orchideæ* the pollen consists of a variable number of vesicles cohering by their exines, sometimes reunited by a cellular growth into a club-shaped mass.

Among the Achlamydeous and Monochlamydeous Dicotydons, the pollen is for the most part spherical or oval, opaque, and protruding a number of vesicles on its surface, caused by the swelling of the fovilla pushing out the intine, through pores of the exine. The *Salicineæ* and *Proteaceæ*, however, have an elliptical transparent pollen, marked with a dark central line, which disappears when placed in water, a bubble of air being expelled, its figure at the same time becomes spherical, and it bursts at three equi-distant pores when put into acid, or at least becomes triangular by means of these re-agents. I have shown on a former occasion (vide Journal of Botany, Sept. 1840), that a triangular or three-lobed pollen sometimes occurs from the pollen having been developed under acid influence, as in *Grevillea*.

That natural group composed of the *Pedaliaceæ*, *Jasmineæ*, *Brunoniaceæ*, *Salvadoraceæ*, *Labiatæ*, *Verbenaceæ* and *Boragineæ*, whose common characters are, their being monopetalous dicotyledons, with superior ovaries, exalbuminose seeds, and erect ovules, have a pollen of the same type as that of the apetalous dicotyledons, namely, oval or spherical, opaque, and forming vesicles on the surface when placed in water. *Boragineæ*, which differs from the others in having an abhilose radicle, is remarkable for its pollen, which appears to be formed, in the greater number of genera, of two vesicles contained in a common membrane, and bursting by two opposite pores, at the point of juncture; in *Borago*, it is to be remarked the pollen is simple.

The group composed of *Globularineæ*, *Asclepiadeæ*, *Ebenaceæ*, *Oleaceæ*, *Myoporineæ*, *Ehretiaceæ* and *Plumbaginaceæ*; agreeing in being monopetalous dicotyledons, with superior ovaries, albuminous seeds, hilose radicles, and pendulose ovules, generally have pollen similar in the characters which I have ascribed to the previous dicotyledonous families; but the *Asclepiadeæ* possess pollen which, in every point of view, must be considered anomalous, inasmuch as I can detect no pores in its exine, regarding what are generally called masses, as single grains of pollen. *Ehretiaceæ* is another exception, having pollen like *Salicineæ*.

The *Plantagineæ*, *Convolvulaceæ*, *Polemoniaceæ* and *Selagineæ*, which agree in being monopetalous dicotyledons, with superior ovaries, albuminous seeds, hilose radicles, and suspended ovules, also agree in the nature of their pollen. Such is likewise the case with the *Compositæ*, *Valerianaceæ*, *Dipsaceæ*, *Caprifoliaceæ*, *Stellatæ*, and *Ilicineæ*, families belonging to different, but nearly allied groups. We see, therefore, that a spherical or oval opaque pollen, protruding numerous vesicles through pores in the exine, is the kind which prevails generally amongst monopetalous dicotyledons with definite ovules.

Those with numerous ovules have, however, a very variable pollen. Thus, in *Gentianeæ*, the pollen is sometimes lobed, sometimes oval; the *Scrophularineæ* generally has an oval pollen, becoming spherical in water, and bursting by three pores, but in *Mimulus* it is spherical and hispid. *Rhinanthaceæ* and *Lentibulariæ*, so closely allied in many respects, differ in their pollen. *Lobelia* has a pollen similar to *Salicineæ*, while *Jasione* has this organ like to that of *Polemonium*. It must be acknowledged that this irregularity of pollen amongst monopetalous dicotyledons with numerous ovules is very remarkable, when compared with its constancy among those with few seeds. It is probably an accident depending on a higher law, but until we attain to a knowledge of the latter, we must be contented with an acknowledgment of the facts as observed. It is to be remarked, that the *Ericineæ* and *Epacridaceæ* alone, among those monopetalous dicotyledons with many ovules, afford us important evidence of affinity derivable from the pollen. In both these families, this organ is compounded of three or four vesicles, connected by threads.

It is amongst polypetalous dicotyledons, that the pollen possesses the most remarkable taxonomic importance. Thus, *Umbelliferæ* is as certainly distinguished by the nature of its pollen as by any combination of other characters. It is notorious, that the characters which are most valuable for subdividing other divisions of the vegetable kingdom, are amongst the *Polypetalæ*, very ineffectual, and I am of opinion that the pollen might be most advantageously employed to supply this defect.

Thus, the nature of the pollen in *Onagrariaceæ* is of greater consequence than the attachment of the seeds, or the number of the ovules; inasmuch as this family is separated by these latter characters from *Circææ*, with which it is otherwise closely connected, while the pollen is the same in both. Again, the characters that separate *Onagrariaceæ* from *Circææ*, unite it with *Myrtaceæ* and *Lythrarieæ*, with whom its affinities are comparatively obscure; but the nature of the pollen distinguishes it from these families.

Leguminosæ is connected by its perigynous exsertion, exalbuminous seeds, parietal placentæ, and numerous ovules, with *Cucurbitaceæ*, *Cactaceæ* and *Mohringeæ*, with which the details of its organization present little in common; while it is separated by some of these characters from *Rosaceæ*, with which it is so closely allied; the nature of its pollen, however, at once separates it from the former families, and unites it with the latter.

The pollen is frequently of more importance amongst polypetalous plants than the albumen. Thus, *Cruciferæ*, *Capparideæ* and *Resedaceæ* are strictly allied to *Papaveraceæ*, *Fumariaceæ*, *Violaceæ*, &c., but are separated by the absence of albumen; the pollen reunites them. And, again, the albuminous order *Crassulaceæ* is more closely connected by its general characters with *Rosaceæ*, through *Saxifrageæ*, than it is with *Ficoideæ*, with which it agrees in little save the succulence of its leaves; yet the last family coincides with it in those characters, that in other groups, are considered of the highest importance, *Crassulaceæ* and *Ficoideæ*, as well as *Portulaceæ*, *Cunoniaceæ*, *Baucraceæ* and *Fouquieraceæ*, being polypetalous dicotyledons, with perigynous exsertion, albuminous seeds, hilose radicles, and central placentæ; while the *Rosaceæ* have definite pendulous ovules, and exalbuminous seeds. The nature of the pollen unites *Rosaceæ*, *Saxifrageæ* and *Crassulaceæ*; separating them from the *Ficoideæ*.

We have many examples among Polypetalous plants, demonstrating that the nature of the pollen is superior to the *exsertion*, for the preservation of affinities. Thus, the exsertion separates *Ficoideæ*, *Portulaceæ*, and *Caryophyllaceæ*, so closely connected by their peculiar embryo; the kind of pollen re-unites them. The *Rutaceæ* through *Hypericineæ* is more closely connected with *Myrtaceæ* than it is with *Geraniaceæ* or *Polygaleæ*: yet the exsertion connects them with the latter, and separates them from the former; the pollen, however, points out the true affinities.

The pollen is in *Polypetalæ*, sometimes of greater importance than even the presence of a perianth. Thus, *Sanguisorbeæ* is united to the remaining *Rosaceæ* by the characters of this organ.

The resemblance of the pollen, in families whose affinities have been long recognized, presents us with further evidence of the value of this organ, in this group. Thus, the *Geraniaceæ*, *Oxalideæ*, *Lineæ*, *Balsaminaceæ*, and *Tropeoleæ*, all have pollen extremely alike.

We have found some exceptions, however, even in the same family. Thus, the pollen of *Inga* and *Acacia* is compound, while that of *Papilionaceæ* is simple. Probably the same relation may here exist as between *Orchideæ* and *Irideæ;* or between *Boragineæ* and *Monopetalous Dicotyledons* [illegible] definite ovules. In the *Ranunculaceæ*, again, we find [illegible] genera with follicular fruits having a pollen similar to that of the *Leguminosæ*, while this organ possesses in those genera whose fruit is in an eterio, an organization like that it has in the *Geraniaceæ*.

I shall conclude this memoir with the following propositions :—

1. That the pollen is an organ of as great, if not greater, physiological importance as the embryo.
2. That the dehiscence, form, opacity, or transparency of the exine, and simplicity or compound structure of the pollen, are the characters of this organ of greatest taxonomic importance, in our present condition of knowledge.
3. That inasmuch as these characters are found by experience to be of very inferior value, in most instances, to those derived from the embryo; while it appears from the physiological utility of the pollen, that characters of at least an equal importance, are capable of being drawn from it, it follows that this organ must, as yet, have been studied in minor points of view.
4. That inasmuch as each of the characters derivable from the pollen are subject to exceptions, the most perfect types may be obtained in this as in other organs, by a combination of characters rather than by any single one taken alone.
5. That the taxonomic value of the pollen varies in different groups.
6. That the species of the same genus have always pollen essentially alike. Apparent exceptions to this rule occur in *Viola*.
7. That the genera of the same family usually have pollen essentially alike. Exceptions to this rule occur in *Ranunculaceæ*, *Fumariaceæ*, and among *Monopetalous Dicotyledons* with numerous ovules.
8. That characters derived from the pollen are inferior to those by which particular families are segregated among *Monopetalous Dicotyledons* with numerous ovules. Excep-

tions to this occur in *Ericaceæ* and *Epacridaceæ*, where the nature of the pollen points out the affinities.

9. That the nature of the pollen is a character co-equal with the definite number of the ovules, among monopetalous dicotyledons. Exceptions, *Asclepiadeæ*, *Ehretiaceæ*, and perhaps *Boragineæ*.
10. The characters derived from the pollen are superior to the nature of the exsertion, or presence of a perianth in *Apetalæ* and *Achlamydeæ*. Exceptions, *Salicineæ* and *Proteaceæ*.
11. The characters of the pollen correspond to the regularity of the perianth among epigynous monocotyledons.
12. The characters of the pollen correspond with the exsertion among perigynous monocotyledons. Exception, *Alismaceæ*.
13. The nature of the pollen affords characters of the highest importance, superior to exsertion, the presence of albumen, the kind of perianth, &c. among polypetalous dicotyledons. Exceptions, *Ranunculaceæ*, and perhaps *Mimoseæ*.
14. The characters drawn from the pollen are superior to the number of cotyledons, or the position of the embryo as regards the albumen, among grasses and sedges.
15. Transverse affinities or analogies exist between very remote families, as regards the pollen. Thus, *Rosaceæ*, *Leguminosæ*, *Rhamneæ*, *Lythraceæ*, *Myrtaceæ*, *Crassulaceæ*, *Saxifrageæ*, *Hypericaceæ*, *Æsculaceæ*, and *Tamaricaceæ*, are allied to *Solaneæ*, *Scrophularineæ*, and *Ehretiaceæ* among monopetalous dicotyledons; and to *Salicineæ* and *Proteaceæ* among apetalous dicotyledons, by having analogous pollen. Again, *Alismaceæ* has pollen similar to that most usually prevalent among dicotyledons.

In treating a subject so immense, and hitherto so little investigated, as that to which this Memoir is devoted, many false conclusions and erroneous observations most probably have been recorded. I have endeavoured as much as possible to avoid errors, but in this age of inquiry, such, if they exist, will soon be detected; and whatever may be the result, it cannot but be beneficial to science.

EXPLANATIONS OF THE DIAGRAMS.

(Tab. XX, A).

These diagrams are not intended to represent the appearance of the pollen in any particular species, but to show the combinations of characters upon which the types are founded that are employed for the purposes of classification in the subjoined memoir.

1. The spherical, opaque, smooth pollen, dehiscing by a single pore, universal in *Gramineæ* and *Cyperaceæ*.
2. The spherical pollen containing three vesicles in a common membrane; peculiar to *Juncaceæ;* best seen in acid.
3. *a*, represents the pollen dry; *b*, the same placed in water; *d*, the same having dehisced by a broad fissure, in acid; this kind of pollen is present in:

Aroideæ.
Smilaceæ.
Colchicaceæ.
Liliaceæ.
Asphodeleæ.
Amaryllidaceæ.
Irideæ.
Commelineæ.
Butomeæ.

4. *a*, represents the opaque, spherical, rough pollen, dry; *b*, the same placed in water, and protruding vesicles on its surface; *c*, the same placed in acid, some of the vesicles have disappeared, and one has burst, having permitted the fovilla to escape under the form of an opaque definite mass. This pollen is to be found in:

Aristolochieæ.
Valerianeæ.

Thymeleæ.
Polygoneæ.
Chenopodeæ.
Amaranthaceæ.
Euphorbiaceæ.
Urticeæ.
Plumbagineæ.
Plantagineæ.
Primulaceæ.
Halorageæ.
Callitrichineæ.
Cucurbitaceæ.
Cactaceæ.
Tropæoleæ.
Caryopyhlleæ.
Nymphæaceæ.
Papaveraceæ.
Fumariaceæ.
Violaceæ.
Ranunculaceæ, genera with an Eterio.

Alismaceæ.
Synanthereæ.
Dipsaceæ.
Caprifoliaceæ.
Rubiaceæ.
Jasmineæ.
Convolvulaceæ.
Polemoniaceæ.
Labiatæ.
Verbenaceæ.
Tiliaceæ.
Malvaceæ.
Cruciferæ.
Resedaceæ.
Geraniaceæ.
Balsaminaceæ.
Berberideæ.
Polygaleæ.
Portulaceæ.
Ficoideæ.
Ilicineæ.

Lythraceæ.	*Rhamneæ.*
Rosaceæ.	*Saxifrageæ.*
Leguminosæ.	

On the HAIR-COLLECTORS OF CAMPANULA, *and the mode of its fecundation; by* W. WILSON, ESQ.

(TAB. XX. B).

BY way of apology for the following remarks, opposed as they are in many respects to those of M. Adolphe Brongniart, in the "*Annales des Sciences Naturelles**," it may be proper to state that this investigation was commenced with no other object than to enjoy the gratification of witnessing the facts related by Brongniart, though with very little expectation of being able to follow him in all the details, much less of finding that anything had been unaccomplished by him. I may, therefore, claim to have examined the subject with an unprejudiced mind; and as I am fully sensible that authority of such weight ought to be treated with great deference, my inquiries have, in consequence, been most carefully and deliberately conducted. The results are recorded with the more confidence, because they confirm, to a certain extent, the previous observations of Brongniart, although they lead to an opposite conclusion, and go very far to prove the accuracy of the views held by Treviranus and Link.

The principal fact insisted upon by Brongniart, is the retractile property of the hair (or pollen) collectors, immediately after the period of fecundation. To the truth of this fact I can bear witness. The explanation offered by him, however, has no reference to the purpose for which so singular a property exists. The new facts which I have observed appear to throw much light on this point.

The pollen-collectors in *Campanula rotundifolia* (the only species which I have as yet examined), are thickly disposed in regular lines upon the upper portion of the style, and at the time of expansion of the corolla are placed in immediate contact with the anthers throughout their whole length, spreading outwards from the style at nearly right angles, their apices bent upwards; they are often slightly curved throughout in the same direction. During the period of fecundation the lower part of the style is elongated, and the pollen-collectors, being forcibly elevated, sweep up the pollen from the cells of the anthers in such quantity as to be entirely covered with it. At this time, the pollen-collectors are not at all "invaginated," but are simply covered and concealed by the numerous grains of pollen which also fill up all the interstices between the hairs. These pollen-collectors are of most singular structure; they consist of two concentric tubular membranes, sufficiently elastic and firm at the first to be cut across without any change of figure, and they have, when perfectly formed, a distinctly marked *foramen* at the apex. It is easy to strip up the outer membrane, after having lacerated it below with the dissecting needle so as to display the inner tube. This outer membrane is, no doubt, an external prolongation of the cuticle; but the inner membrane is most certainly continued downwards below the pollen, and I have seen them in different points of their progress towards the cavity below. In the cavity itself I have also ascertained, by careful dissection, that three grains of pollen find for themselves a convenient receptacle. It is in the form of an oblong cylindrical cell, whose diameter is that of the grain of pollen, and its axis directed obliquely downwards towards the axis of the style. It is about one-third as long as the exserted part of the tubular hair. It seems a just inference to assume that the pollen has entered by the foramen at the summit of the hair, during a momentary enlargement of the orifice specially adapted to this end. Those hairs only which are situated near the summit of the style have hitherto been found perfect in their office; but all of them are equally retractile; some of the perfect ones are tumid in the middle, so as to be spindle-shaped; in this case the inner tube is not distended beyond its ordinary size.

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* Vol. 12, p. 244.

The invagination of the pollen-collectors appears to be simultaneous with the act of fecundation, and may be compared to the peristaltic motion of the intestines of animals. It seems to be specially designed for the safe and sure conveyance of the grains of pollen into the cavities which, as already stated, are formed in the substance of the cellular tissue of the style, where there is no visible impediment to the formation of *pollen-tubes*. Except actual proof of the fact, I have every reason to think that this formation does take place, and that the impregnation of the ovules is effected by this channel, and not by the necessary intervention of the stigma; for it must be remarked that the branches of the stigma do not expand until some time after the pollen has been lodged upon the pollen-collectors, whence there is no visible means of conveying the pollen upwards into direct contact with the stigma, and it is quite a rare circumstance to find a stigma in any stage with pollen adhering to it. I leave this part of the subject to future inquiry, and proceed to notice the hairs in their invaginated state. They do, indeed, as Brongniart has well observed, withdraw themselves so completely into the imbedded cavities as to be scarcely visible above the surface of the style. In this state they exhibit a truncated extremity. To restore them to their original shape and dimensions, nothing more is requisite than to lay a thin longitudinal section of the style in a drop of water under the microscope and gently to press the bases of the pollen-collectors, when they immediately protrude themselves, pushing before them, not unfrequently, the grain of pollen which in the act of retraction had been drawn into the cavity, as Brongniart has accurately recorded. These pollen-collectors, when thus restored, are found to possess both the membranes unaltered. In their perfectly retracted state, the apex is certainly not visible, but it may be made to project in any degree by the application of carefully adjusted pressure.

The preceding observations lead forcibly to the conclusion that there is an essential communication between the pollen-collectors and the ovarium; and this conclusion is not weakened by an attentive examination of the structure of the external zone of the style and stigmatic branches. The cellular tissue which surrounds the cavities for the reception of pollen is obliquely packed in lines sloping downwards towards the ovarium and the vascular tissue at the summit of the style divides into numerous branches, which have an outward diat their base lodged in the cellular tissue of the style and two enclosed grains of pollen, highly magnified; *f.f.* 4, 5, 6, invaginated pollen-collectors at different stages of pressure, *magnified.*

W. WILSON.

Orford Mount, near Warrington,
Sept. 1, 1842.

BOTANICAL INFORMATION.

ALREADY we have given a favourable notice of the enthusiastic and successful researches of Dr. Hostmann, in Surinam. Another consignment of plants has been received from him; so that the total number of species now transmitted by him is 1,000, and he bids fair to throw great light upon the Flora of a very extensive and highly fertile region, where few have ventured to botanize, on account of the pestilential nature of the climate. The following letter, which accompanied the plants just mentioned, will show that it requires no ordinary courage to traverse the primeval woods and swamps of Surinam.

Paramaribo, May 10, 1841.

The plants concerning which I wrote to you in my last letletter, dated April 24th, having been since shipped on board the "Paramaribo, Capt. Topper," you will herewith receive a continuation of that letter.

I was at full liberty to postpone my departure* to a more favourable season, but as experience is only to be gained by making different attempts, I decided on quitting Paramaribo on the 20th of March, 1840, during the heaviest rains of a season, unequalled in the memory of the oldest inhabitant for its excessive moisture. I was accompanied by a gentleman, whose acquaintance with the Bush Negroes was likely to prove useful, and whom I had managed to inspire with some taste for natural history; besides which, I took with me an assistant, and a few trusty black-servants, all initiated in collecting and preserving specimens of natural history productions. Having dispatched the greater part of our baggage by sea, on board a schooner, to the mouth of the Marowina, I embarked in a canoe, forty feet long, by six feet broad, covered with a moveable tent, made of oiled canvas. To form any idea of the different articles which I was compelled to carry with me into the Bush, it must be recollected that it takes two months to go from Paramaribo to Anka, the place of residence, and that I had completely determined to settle there, pursuing my excursions from thence as far into the interior, (including French Guiana), as might be found practicable, and being guided on these occasions by Bush Negroes and Indians; the former to transport the collected objects, while from the latter I expected to obtain many interesting particulars respecting the properties of vegetables. Six negroes manned our canoe. Under torrents of incessant rain, we passed into the river Commowina, and soon found that our tent was far from waterproof. Following the course of this river in a south-easterly direction, we entered the river Cottica, and on the 23rd of March, reached the last inhabited place, a military post, named Semiribo, where we exchanged our negroes for the Bush Negroes who were awaiting us there to continue our voyage. The 25th saw us on our way again, accompanied by six canoes, each manned with three Bush Negroes, serving as transports. We ascended the numberless windings of this stream, and arrived on the 28th, at a place where it exchanges its name for that of Coromotiba; we got here in the afternoon, and had to enter the Wana-creek, which flows in a more easterly direction towards the Marowina; but ere we could proceed, our negroes insisted on paying their respects to a Fetish, supposed to reside in this spot. The day being thus nearly spent, we entered this swollen rivulet under ill-omened auspices. Bats and numerous *Caprimulgi* were sweeping round us in all directions, and the distant roar of thunder announced the coming tempest, when we made the unlucky discovery that our canoe was actually too broad for this creek. There was no choice—all round us was covered with water; I could not think of returning, and it was impossible to remain where we were; so a passage was forced with axes and cutlasses. To augment our distresses, we were drenched with rain; and we must, after all, have passed the night in this howling wilderness, if the incessant flashes of lightning had not disclosed to our view an elevated spot, where a family of Bush Negroes had erected a hut for the purpose of woodcutting. Hither we made our way, and felt tolerably comfortable when seated near a large fire, and treating ourselves to a cup of strong coffee, our sensations of thankfulness being enhanced by the storm which raged without. The country which we had hitherto passed was low and uninteresting, and the plants such as can be had almost anywhere in this colony. From Semiribo to the Wana-creek, the whole land is a morass, clothed with a bush which seems to struggle against the overspreading waters. We were obliged to hasten to the Marowina, which rendered it impossible for me to collect plants, much less to dry them; still, the few that I did gather and preserve enable me to assert that they can be dried at any period of the year, for assuredly, never could we have encountered with a more unfavourable time.

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* To Anka—see p. 106 of the present volume.

On the 29th, before quitting our night quarters, we did our utmost to prevent the rain from soaking through our tent, by the assistance of the large leaves of a *Heliconia*. We met with the same obstacles as before, the paddles being useless; so that our advance was very slowly effected by shoving along the canoe with long poles, a tedious process, which occupied us till late at night. Fatiguing as the passage proved, through this doleful waste of waters, I fear the description of it will be quite as much so to you, and therefore, I prefer to tell you that the surface, in the more open places, was entirely covered with a *Nymphæa*, much similar to the

European species. A few smaller aquatic plants (*n.* 82-85), appeared more interesting, with *Cyperoideæ* (*n.* 47), some of which grew very large. There were also several *gramineous* plants which delight in water; a *Fern* (*n.* 5), and several *Melastomas*, among them a very fine purple-blossomed species (*n.* 28), clothed this extensive plain, whose boundary seemed formed of innumerable *Fan-Palms*. On the shrubby trees, which seemed to bear up with difficulty against the water, a number of *Tillandsias*, *Bromelias* and *Orchideæ*, vegetated luxuriantly. Among the latter, I noticed a *Vanilla* (*n* 33), and several *Epidendreæ* (*n.* 36 & 37), with a number of others I had not seen before, and which were not in flower. In the shade, a blue-blossomed *Lisianthus* (*n.* 29), was highly pleasing to the eye. A great many *Aroideæ* were growing, both on the trees and in the water; of the latter kinds, I collected *n.* 34, which alone was in flower. On the banks of the creek, where the ground rose a little, I gathered a few *Ferns* (*n.* 27, 5); one of these (*n.* 111), appearing somewhat different from *Schizæa elegans*. I should be quite ashamed of having procured so very few specimens as you will find marked "Wana Creek," if the circumstances under which I visited this spot had been more favourable to botanizing. I would beg you to take into consideration, that und on such an errand as mine, can frequently recount me adventurous tale, with which to season the otherwise, in this case, insipid narration. I have nothing of the nd to produce, except, indeed, our encounter with one of ose hideous snakes, known here by the name of *Jarrakooka*, hich, having been roused from his dark abode, nearly lled one of our men; for there is no difference, in this case, tween wounding and killing. The mere sight of this imal is sufficient to inspire dread, and to apprize the most reless wanderer of what he has to expect: a flat cordate ad, fixed to a very slender neck, large protruded glittering es; with still larger cavities below them, the body inflated, d terminating in a spine, and covered with carinated ales, horny to the touch; these form an aspect which canot be contemplated without making one feel sick. Nothing n be compared to the virulence of the poison ejected from e fangs in the jaws of this monster, except it be the tonishing rapidity with which it takes effect. The soundest ame is immediately affected, excruciating pain ensuing as on as the wound is inflicted, followed by an effusion of *hite blood* from all the apertures of the body, the muscular arts above the injured spot are instantaneously destroyed y gangrene, and these awful symptoms suddenly terminate in eath, the event being announced by putrefaction; but though e offensive exhalations never fail to attract a number of ultures, even the most voracious kind of this bird (*Cathartes ura*) refuses to touch the putrid corpse. The snake, whose ite occasions these truly awful effects, is generally six feet ng, of a dirty yellowish colour, with black rhomboidal pots; its scientific name being *Trigonocephalus rhombiatus*. he afternoon of the 4th of April saw us arrived at the Maowina, six hours' distance from its mouth. We ascended, ot without danger, our canoes being but small and a coniderable swell was on the river, many times our barks disppearing behind the waves on which they had just been lifted. he departing sun gilded the shore of Cayenne, when we erceived, on the opposite side, an Indian settlement, which seemed hospitably to bid us look thither for shelter, and on approaching its copper-coloured patriarchal inhabitants, their kindness did not belie the promise of their simple huts. These people belonged to the Gallina tribe, and their Chief immediately ordered his men to aid us in passing a shoal, behind which our little fleet might find safe anchorage. An entire hut was placed at our disposal, and these good-natured Aborigines, far from asking any present, offered us with the utmost frankness their little gifts. The chief set the example, with easy and unembarrassed manners, just as if it were a thing of course, he brought us a fowl, and the women each gave a cake of manioc, neither of which was at all despicable food. With equal frankness, these people requested some rum, and though the men seemed to relish this nauseous beverage, I am sorry to say their partners far exceeded them, their passion for spirits being perfectly insatiable. Soon the liquor did its wonted work, and the aged chief, with savage eloquence, began relating his military exploits, just as if the affair had occurred yesterday, whereas he was referring to the conflict between the free inhabitants and revolted slaves, upwards of eighty years ago! He must have been nearly one hundred years old to have taken part in this battle, and yet there was not a single white hair to be seen on his strong-looking skull, and he lived with three wives, the youngest of whom had an infant at her breast, and he looked as if he might last for half a century more.

Anxious to obtain all the information I could, as to the communication existing between the rivers Amanza, Oyapok and Aproaga (all on the French territory) with the Tapanoni, I spent a day with these Indians. It is truly disgraceful to any civilized government that these poor creatures and the numerous other tribes of Aborigines in Guyana have hitherto been utterly neglected. Simple as they are, one may always learn something from them. They told me of a shrub, which seems to be the *Schousbœa coccinea*, of which they aver, that *applied externally*, it induces vomiting.

On the 6th, we pursued our way up the Marowina, and found it full of islands, some of them pretty large, but almost all liable to inundations. Crossing the river to the French shore, which was very steep, I could not refrain from ascending it, and there I gathered the *Fern* (*n.* 38), and saw several *Palms* that I had never met with before. One of these, fifty feet high, with a smooth and slender stem and uncommonly long pinnate fronds, I caused to be felled, because of the crown which it bore, consisting, perhaps, of 500 drupaceous fruits, exactly resembling those of *Prunus domestica*, being covered also with a bluish farina, though not equalling our *European plum* in flavour. The soft pulp, however, bruised and mixed with water, yielded a delicious beverage, similar in taste, and of the same colour as chocolate, and the seeds contain abundance of oil. Far more valuable, however, might the wood prove in the hands of skilful inlayers and cabinet-makers, for it is nearly as hard and heavy as metal, and takes an equal polish; the colour is dark chestnut, with very regular intervening lines of vivid yellow. Though the pieces of this wood might probably only measure four inches broad by two inches thick, I am sure they would afford a valuable article of trade. And now I find no words to describe the forest which I entered. What are our largest oaks, when compared with these gigantic trees! One of them, prostrate on the ground,. measured ninety-six feet in length, before giving off a branch, and its diameter was continuously nine feet. The increasing rapidity of the stream and the frequency of whirlpools, some of which are dangerous, announce the existence of rocks below water, for which reason, the stream is impracticable for large boats. The water is transparent, revealing a number of brilliantly coloured fish, one, for instance, scarlet; and another, blue with red eyes; not to mention many less conspicuous species, as *Silurus fasciatus*, *Tetrodon ocellatus*, and *Silurus Bagre*.

Once more we halted with a horde of Indians, reaching, on the 7th of April, the frontier Post, Armina, which in former times had been intended to serve as a bulwark against the Bush negroes, whenever these should rise in arms against the colony. With the exception of one canoe, which I despatched to Anka, to give the chief notice of my approach, that he might send off the necessary barks for our transport, I here dismissed all the other canoes. And a whole month was I obliged to wait, ere the chief thought proper to send down the canoes, which he probably might not, even then, have done, if I had not found means to let him know that if he did not fulfil this duty instanter, I should go back to Paramaribo. The hint was taken, and though I had asked but six canoes, he sent fifteen, each manned by three persons, and all under the command of his own chief captain, *Arabi*, a very intelligent negro, who strongly advised me not to risk my life by proceeding at that season, but rather to wait the dry weather, when the navigation of the river might be more safely performed. I think I should have hearkened to this counsel, which was as respectfully tendered as it was founded on correct grounds, if it had been at all possible for me to collect plants in the neighbourhood of the Post; but the river was enormously swollen, and the whole surrounded land deluged with water, so that I must have remained perfectly idle and confined to the house—a prospect so intolerable to me, that, though suffering from low fever, I determined to embark. There is nothing intestinct, it selects the most remote part of the body, where there is least risk of being caught. I offered my bare feet to the attack of these bats, and soon had the satisfaction of seeing two of them busily engaged, one on each great toe. So gently did they lay hold, vibrating the air incessantly the while with their expanded wings, that I could not ascertain the precise moment of the bite. In a few minutes they appeared to have taken sufficient, and dropped off to the ground, when to my great astonishment, I found the wounds tö be pretty large, and of a triangular form Δ.

We quitted the post on the 5th of May, the river rising continually, and sweeping down with the velocity of the arrow. We were obliged to keep close in shore, for had we risked entering the current, we should have infallibly been carried down the river by its force. All hands being required to stem the impetuous flood, it was vain to think of botanising, and with regret was I compelled to pass many plants which I had never seen before. One island which lay in our course was full an hour long. On either side the land increased in elevation, and at a distance we discerned mountains, often enveloped in clouds of fog. As it is impracticable to navigate these rivers by night, we were always obliged to land and erect huts every evening, a kind of work in which the Bush Negroes are remarkably well skilled. Two days after quitting Armina we came to the first cascades, called Quamina-Nikko. An hour previously to reaching them, our ears were stunned with the roaring of the water, echoed back by the dense forest, through which, with resistless fury, the swollen river forces its way. Laying aside the consideration that our lives were exposed to imminent hazard, it was a grand sight to behold, as I did, from a rising spot, the spectacle of a broad river, rushing down a steep declivity among numberless rocks. We had to double the Fall, and therefore quitting the bed of the river, we struck into the Bush, where there was almost as much to be apprehended from the trees, as on the water from the cascade. Before we had left our night-quarters, our negroes had provided themselves with long poles and hooks, and now insisted upon having our hammock-ropes of silk-grass, the solid fibres of several *Bromeliaceæ*. The small canoes were less endangered, and while one boat was fastened to a tree, all hands proceeded into the Bush, and there, with extraordinary activity and address, they cleared a passage for us, which being effected, forty men came back, swimming to our assistance. It must be remarked that a Bush Negro has no option: if he cannot swim, he must be drowned. We now slowly ascended the stream, with the aid of pole-hooks and silk-grass ropes, and had these latter wanted strength, or only slipped for a moment, our destruction had been inevitable, for we should have been dashed to atoms against the trees by the force of the current that would have swept us down. Imminent, however, as was the risk of passing into eternity, we still could not help taking some notice of surrounding objects: with our poles we were struggling through a virgin forest, twenty-six feet above the highest average level of the river, and much did I regret the impossibility of carrying away any of the beautiful plants, which clinging to, or hanging suspended from the trees around us, we were obliged to pass. The utmost exertions, added to the wonderful sagacity of our negroes, still only enabled us, after half a day's labour, to reach and fishing, and before the sun had reached the meridian, they returned, loaded with an ample and varied supply. Among different kinds of *Fish*, I may mention two, as particularly delicious, the *Ajamara* and the *Comara*, the first being captured very early this season with animal bait, and the second with the fruits of *Spòndias lutea*: it is perhaps the best of all eatable *Fish*, the *Trout* not excepted. Among the feathered game were *Crex Alector*, breeding at this season, *Penelopes cristata* and *P. Marail*, *Ortalida Parraqua*, and many specimens of *Psophia crepitans*. The havoc which had been committed among the *Mammalia* was still greater; for at such a time of general flood, the animals take refuge on the higher spots, from whence they cannot escape. A *Cervus*, hitherto undescribed, with undivided horns and very slender legs; of *Dicotylis torquatus*, perhaps a dozen specimens; several *Mycites Seniculus* and *Ateles paniscus*, with many smaller animals belonging to *Mus* and *Didelphis*, yielded us a great variety of food. The leader of the party, the honest Captain Arabi, with much politeness, and as an acknowledgment of my diplomatic character, presented me with part of a roasted monkey, which I, not to be outdone by a savage in civility, constrained myself to accept, spite of the aversion that attaches to eating a creature so much like our own species; and truth obliged me to own that the flavour was excellent. *Mountain cabbage* and the leaves of *Lobelia Surinamensis* served us instead of greens, while the beverage made of palm-fruit, mentioned above, with the fruits of another kind of palm, constituted our dessert.

On the 9th, a very fine morning, we departed. Before us rose a rather lofty mountain, the sight of which awakened in me many a reminiscence of the happy past, so that, lost in reveries of my native land, I had insensibly reached a spot which compelled me to give my attention to the present, and excited some serious fears for the future. Oddly enough, the Bush Negroes call this place, *Gunshot*, a name which will never be effaced from my memory. The river being forced into a narrower bed, between rocky shores, a defile is formed,

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rising at least a thousand feet perpendicular out of the river, which, nevertheless, was overgrown with a gigantic stately forest. To climb this mountain from the river-side, was quite impossible; in the furrows which had been formed by the running down of the water, the ground appeared of a dark red colour, evidently from its ferruginous nature.

On the 10th, we arrived at the spot where the Lana meets the Marowina, and immediately below the junction of these two rivers, the combined mass of water hurls itself over innumerable rocks, arranged in somewhat of an amphitheatre. It is impossible for me to state the descent which the river here makes, but the fall must be considerable, and the view which is obtained when looking down the cascade is really sublime. The forest beneath is veiled from the eye by a dim cloud of mist rising from the foaming surface, and forms a most pleasing contrast with the vivid green of the bush that lines the shores, across which a rainbow stretches. The whole enormous mass of water resembles an undulating snow-field, and the roaring is really tremendous. At a great height above the stream, a number of Anhingas (*Plotus melanogaster*) were hovering, and darting, from time to time, on the fish which had probably been killed by the dashing waves against the rocks. We doubled this fall, which is called by the negroes "Singatity."

The next day, May 11th, we arrived, late in the afternoon, at the first village of the Bush Negroes. The joy expressed by those individuals who received us were as extravagant as that with which they welcomed their relatives who accompanied us; yet it was perfectly sincere and expressive of the danger to which they knew we had all been exposed. I saw one of these Bush Negroes, who was a hundred years old—an age they not uncommonly attain, and who declared that he had never known the river to be so high. I had to stop at every village, that I might receive the congratulations of its inhabitants, so that it was the 14th of May ere I reached the place of my future habitation, which was on a small island. The description I have given you of my predecessors, may show what kind of people they were, and what the so-callèd *Residence* might be expected to be; an uninhabitable hut, defiled by reptiles, with a roof once covered with thatch, but now admitting the rain in all directions, and the whole roof and frame so decayed as not to be susceptible of repair. This house was to accommodate the Resident (myself), an acquaintance, with an assistant, and three slaves, together with our baggage, and to serve, moreover, for a kitchen. Our hammocks were the sole articles of furniture, and while lying in these, wrapt with three thick woollen blankets, we still could not avoid being soaked by the rain, which filtered through the roof as fast as it fell on the outside. My predecessors had always lived with the negroes—a plan to which I could not consent; moreover, it was not a small temporary hut that would serve us, requiring, as we did, to keep a great many goods which we trafficked with the Bush Negroes. These people were bound to provide the Resident with a house, which I therefore demanded, but they put off erecting it from day to-day. Except a barrel of salt pork, our provisions were all spoiled by the wet, and the negroes offering us none for exchange we depended wholly on the pork. Obliged, too, by the rain to remain long in this unwholesome hut, I fell sick on the 30th of May, with a fever, which soon proved to be a nervous one, and kept me in a recumbent posture. In this dismal position, I still sent out to gather plants; one of us sickened after another, and to myself, there seemed little hope of my own recovery. In this way the whole of June was spent. My assistant falling ill, the servant was employed to collect. But when July arrived, and no attempt was made to begin the house, I felt it necessary to quit the place and return to Paramaribo, both to recruit my health, and because I could easily, after this experiment, make the calculation that the profit to be derived from the sale of specimens, would never cover the cost, to say nothing of the risk of conveyance from Anka to Paramaribo. Besides, there is really no dependence to be placed on these Bush Negroes.

You must not suppose that I have renounced visiting this quarter, though I should not choose to settle in it. It is highly probable that I shall proceed, in the beginning of next year, to the Indian settlements of Marowina, and being unencumbered with baggage, and only fitted out for botanizing, I anticipate more favourable results than have followed my diplomatic mission. The most interesting of our rivers is, perhaps, the Saramacca, which an artificial channel connects with the Surinam, and the communication which it affords with the interior is less difficult and hazardous than by way of the Marowina which runs parallel with it. A peculiarity of the Saramacca is that it enlarges in proportion as you ascend it, at the distance of thirty days' journey, expanding into large lakes. The sources are farther inland than our other rivers, and the banks are inhabited by Bush Negroes of a less aspiring temper, and consequently more easy to manage than the natives of the Marowina. If I should not return to the latter district, I mean to visit the river I have now mentioned, and spend part of next year in exploring it. At all events, my recent failure has made no alteration in my plans, and I may inform you, that I belong to the class of men who are not readily baffled. The difficulties I have encountered, and the objects I have seen in this expedition, but confirm my resolution to devote myself wholly to Natural History.

pation, and all I have seen confirms my opinion that 15,000 different species may be procured. I shall study to send you, generally, specimens of a manageable size. It is certainly very disadvantageous to us both that I am not a botanist by profession; but you may depend upon it, that every thing will be done by me to obviate this defect; it may partly be removed by your always sending me the names of all such plants as you receive from me, and partly by studying the subject myself. For, as the mere process of collecting is fatiguing and monotonous, and the nights in Surinam very long, so I think part of those hours, and some of the proceeds from the sale of specimens, might be devoted to making myself acquainted with Botany. I would request you to have the kindness to point out to me such works as would aid me most. At present I possess only, *Persoon's Synopsis Plantarum*, *De Candolle's Prodromus Syst. Natur.* vol. vii, *Linnæus' Systema Vegetabilium* (the 16th edition, by Sprengel), 5 vols. and *Lindley's Natural System*; of *O. Swartz's Flora Indiæ Occidentalis* I have only the perusal. Persoon and Linnæus give merely enumerations, and their descriptions are quite insufficient, at least, for such beginners in the science as myself, while I should think that experienced botanists might dispense with both these works. De Candolle's pleases me very much, but it is incomplete. I do not know what I would not be ready to give for such a book as that of Sprengel with descriptions like those in your British Flora, or in Lindley's System. Of many technical terms, adopted within the last twenty years, I am ignorant, and the only book to which I can refer, is an old edition of Willdenow's Terminology, published in 1821. Besides the few books above mentioned, I possess Miller's Gardener's Dictionary. My magnifying-glass, I regret to say, is but very indifferent,

But though Botany will still claim my preference, yet even you, who are wholly devoted to that science, would blame me if I neglected the other branches of Natural History, which engross the attention of so many distinguished men.

The *Mammalia* have never been better studied here than the vegetable productions of this country. There are Quadrumanes yet undescribed, and much time must elapse ere all our *Cheiropteræ* are known in Europe. The genera *Canis*, *Mustela*, *Viverra*, *Felis*, *Didelphys*, *Mus*, *Echimys*, and *Cervus* require much attention. Still more remains to be done with the birds of this colony. The genus *Falco*, including its subdivisions, is particularly rich; there are, say, one hundred and twenty different species, and though many be, doubtless, already described, still, numerous novelties exist. One of our *Eagles* is pure white; and there is a *Falcon* much larger than the *Falco Harpya*, and not agreeing exactly with the description of that bird; it measures fifteen feet from tip to tip of the wings, is crested, gray with a white belly, and the lower part clothed with feathers, which might form an article of commerce for a lady's head-dress. This is the most daring bird I ever met with; he finishes a whole *Mycetes Seniculus* at a meal, and will swoop down upon a full-grown hunting-dog, sitting in a canoe between the Bush Negroes, and carry it aloft in his talons. There are a great number of new birds, of smaller size than the species of *Falco*; this is eminently the case with the genus *Trochilus* t this moment a collection of birds and insects to of, I should be greatly at a loss to set a price upon he value of such articles being so extremely relative. ıg your zoological friends, there are any who wish for :d animals from this colony, of whatever description, d better either fix an average rate for the specimens, ›oint out the identical articles they desire, and the ıey may be willing to pay for them. I should be › impose upon my employers, and would desire to isfaction to every body; but while I am perfectly that this kind of traffic, even if pursued on a large ɔuld never enable any one here to enrich himself, ıust seek thus to procure the humble means of sub- . When I was a Göttingen student, it was my delight rate my windows during winter with some exotic ı, which I purchased from the person who had of the Botanic Garden *à poids d'or*, though the hemselves were not uncommon: and a few years unning Frenchman arrived here from Cayenne, with collection of growing plants, skilfully packed and ıbelled, which he vended at a high price as different ı of *Rose*, black, blue, green, and no one knows what besides, which, when they sprouted, soon proved ves to be *Drepanocarpus lunatus, Hibiscus Rosa-* , and such things as may be found here in every Now, if these plants had really been what they d for, and could I but calculate on obtaining such a r *Orchideæ*, I do believe it would be a vastly good ion for me to ship off a few thousand of these, nay, ıt an entire vessel with them, that they might, in the of Europe, adorn the windows of the rich.

' proceed to answer the remarks in your letter. The ›rwarded herewith may be considered as a fair sample I can undertake to supply, premising that I am con- trying to improve the process of drying, and have ıson to believe that I shall even succeed, in time, in ng the colours of the flowers. To you I shall study to send such specimens as may serve for full descriptions, even if they are not capable of being figured; adding some sketches of the fructification, and of those nicer parts, which are apt to change their form when dried. *Epiphytes* I find no difficulty in preserving without splitting the stem: my only regret is that there is no possibility of arresting their most brilliant, but fugacious colours. Several of my numbers will show you that the minutest *Cryptogamic plants* have not been over-looked. *Palms,* I confess, are puzzling affairs, because of their great bulk, especially when gathered far from my home. Except a few *Liliaceæ,* which grow in brackish water, there appear not to be many aquatics in our lowlands; *Pontederia azurea, Cabomba aquatica,* a small *Umbelliferous plant* and a few *Nymphæaceæ* are the chief. Going to Anka, the water was too high for me to find any; but when returning, while I was sick, I noticed whole rocks covered with a very singular production, of which all I can say is, that the foliage resembles the finest moss, while the scapes are quite disproportioned to the leaves, being one foot and a half high, and bearing many pink flowers on a spike.* This plant you will receive among my other things. In the Tapanoni and Lava, the *Victoria regalis* is certainly not to be found, but I feel little doubt of meeting with it in the Sarawarmth, and an equal portion rubbed on the *planta pedis*, when this part is affected with the *chiga*, (*Pulex penetrans*) instantaneously kills these tormenting insects. If I am not greatly mistaken, the tree is of high importance, its oil being a medium in which caoutchouc may be dissolved.

I wish my plants may please you, and while I use my utmost efforts to satisfy you in this respect, I beg that you will take the trouble to let me know, as much as possible, their names; not merely that I may fix them on my memory, but because it is tedious work merely to collect specimens, without the possibility of studying them.

This letter was written nearly a year ago, but was accidentally omitted, when the plants were sent."

Nothing daunted by the perils and sickness which attended Dr. Hostmann in his previous journeyings to the interior, we learn from a subsequent letter, dated, indeed, so late as July, 1842, but which was brought by the same vessel as the preceding, that he is preparing for another tour.

"The next excursion I shall make," he says, "will be to the region of the Surinam river; I am already furnished by the Government with the necessary recommendations to the postholders residing in these quarters, and, by the assistance of the Bush Negroes, who inhabit the mountainous parts, I shall try to ascertain the sources of the river. Then, turning to the east, I shall traverse on foot, the space between this and the river Marowini (Tapanoni), an immense mountain forest, in which we shall be obliged to continue for at least ten days, till we arrive at the borders of the last river, which likewise, is inhabited by a tribe of Bush Negroes. A part of the dry season I shall spend on the banks of the frontier river, which I could only see when inundated, and then I trust to gather those plants which grow on the rocks, and which, for a considerable part of the year are under water. Returning from this expedition, I shall have to pass the Wana-Creek in a different season, and am sure to find plants different from those I have remitted from that part of the colony.

The season is this year very irregular. We should now have dry weather; but we have continual showers of rain. It is a pity that there is no possibility of my providing myself with books and instruments, to make physical and astronomical observations in that part of Guyana I am now ready to explore; and of which we know little more than of the land in the moon. Rivers, not much inferior to the Essequibo, are not even laid down on our chart; or, where this is the case, little more is given than the embouchures. What a Frenchman has lately called the Alençon, I now know positively to be the Marowini, which joins the Tapanoni (Tapanehoni), under the 4° N. Lat., and comes in a S. E. direction very far from the interior."

F. N. Hostmann.

Botanical Intelligence from the Swan River.

Since we published the last extracts from Mr. Drummond's letters, (p. 397 of the present volume) in which it was mentioned that his fine collections were to come to England on board the "Kilmaurs," the most alarming reports were given in the Newspapers, respecting the safety of that vessel, and it *dones;* they are carefully numbered, and the sets put up separately, each in three parts, also numbered: there will be 14 of these sets for sale, and another set is destined for your own Herbarium; for though I am well aware that you already possess most of the species from me before, yet they had hitherto been differently numbered, and it is my hope that those Botanists who purchase the sets, may obtain the best information about them through some of your valuable publications.

Since I sent you the large box, of which you acknowledge the receipt, I have forwarded another, containing about 200 specimens, and I put into it also some seed-vessels of the highly curious *Mesembryanthemum*-like plant,* which you desired to see, and I anticipate its becoming a general favourite, when it shall bear ripe fruit in England. I was at the place where it grows last summer, but too late for the flowers, and the seeds were not mature.

In addition to the 1000 species, I inclose 134 others plants from this neighbourhood for yourself, all numbered species, of which I have kept corresponding numbers, except No. 130, which is the only individual I have ever found of a most curious orchideous plant, apparently the only species of its genus. The lower lip is large in proportion to the flower, and covered with long purple hairs, the upper division of the perianth forms a hood, and the two side divisions are very short. No. 129 is a fine *Caladenia,* with a curiously fringed lower lip, nearly allied to a large species I had sent you before, if the latter also possesses a fringed lip; No. 129 is perhaps not distinct from it; I have never been able to find any more specimens than those which I send you.

No. 125 is the large *Fungus,*† which emits a light by night, as detailed in a former letter. No. 126 is a new *Anigozanthus,* indigenous to the sandy country about 50 miles north of this place, and easily distinguishable from *A. flavida* by its short sickle-shaped hairy leaves. I am not acquainted with the species which Dr. Lindley calls *Manglesii*, and its beautiful varieties of purple and green; if it be our large species, the *latifolia* of Frazer, then the *dwarf green Anigozanthus* and the *Green Swamp* one are very distinct from it. Dr. Lindley's *A. humilis* is my *early orange* species, of which I have already described to you several varieties; and my *dwarf green and crimson* is the *A. Moorii* of Preiss, nearly agreeing with the *Green Swamp Anigozanthus* in the form of its foliage, but with a less glaucous hue, and indeed the two species are quite distinct. The *A. Moorii* of Preiss has a wide range, and is common in the best description of pasture land, from the Swan River to Mount Parker; I have seen it for 300 miles north and south. Mr. Arnott is quite correct in uniting the *Sarotes latifolia* with blue or lilac flowers, which grows to the west of the Darling range, with the beautiful rose-coloured variety No. 121. But I do not think him so right, in combining also the small white one, (No. 122,) that plant having quite a different habit, creeping roots, and only growing from 6 to 9 inches high, while No. 121 attains a height of 3 feet, and never has creeping roots. I observe that Dr. Lindley considers both my single-flowered *Drakeas* as identical, and calls the species *elastica*; but they are perfectly distinct. I have named them *D. livida* and *D. lucida*, and can discriflowers, this foliage entirely disappears, but it would seem that, ere this is the case, the leaves have supplied the tuberous roots with their superabundant nutriment, and these in their turn supply the flowers and seeds, which could not exist at the season when they make their appearance, unless so provided. No. 92 is supposed to be your *Leucolæna peltigera*, common in the *Mahogany Forests* of the Swan River; and No. 89 a *Composite* plant, remarkable for its property of exciting sneezing, when the flowers are rubbed between the fingers and put near the nose. No. 65 is one of the *Eucalypti* which I found last summer, and mentioned in a former letter. Nos. 70 and 71 are curious species of *Calothamnus;* the latter, having a stem 9 inches in diameter, is the largest of the genus with which I am acquainted. No. 64 is a curious and very rare *Myrtaceous plant;* it grows in the form of an *evergreen Cypress*, and attains a height of nearly twenty feet; on my way to King George's Sound I discovered it, but was unable on my return-journey to detect the habitat again. No. 28 is a *Xylomela,* different from the yellow-leaved species described by Cunningham; and 20 is a beautiful pinnate and silvery-leaved, yellow-flowered *Grevillea.* The Nos., from 1 to 10, are species or varieties of *Dryandra,* some of which I expect you will find new. No 5 is particularly remarkable, attaining a height of 8 or 10 feet, apparently without a branch, and looking outside like a dense mass of foliage, but broader at the bottom than the top, so I suppose it must have branches concealed by the leaves. I sent you these *Dryandras* before, most of them were gathered during the journey to King George's Sound. No. 1, in the sandy country to the North; No. 4, on the Beaufort River; this latter is the same as I had conjectured in my journal to be the *D. senecifolia* of Baxter, but I now find that its flowers do not answer his description. No. 2 is a noble species, and formerly mentioned by me as having foliage like *Banksia grandis.* The leaves of No. 3, resemble Frazer's *D. bipinnata,* but its inflorescence is quite different.

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* See p. 91, of the present volume of the *Journal of Botany.*

† See *Journal of Botany,* p. 215, of the present volume.

I feel great pleasure in looking at your *British Flora,* which recalls to mind many of my old acquaintances. I should much like to have the work complete, especially as many of the *Lichens*, *Mosses*, &c., which grow here, are the same as what are found in England.

You have already received from me many letters and newspaper accounts of our *Poison plants*;* which we have clearly ascertained to belong to the *Leguminosæ*. No. 203 of the general collection, is the one which has done most of the mischief to the east and south of the Darling Range. No. 204 is the plant from the Black Adder Creek, used in all the experiments at Guildford. Nos. 123 and 124 are also known to be deleterious. I think, we have in some degree satisfied ourselves that the common *subcarbonate* and other preparations of *Soda*, act in a measure as antidotes to the virulence of the poison; not that I feel sanguine that anything will ever be discovered that can avail in protecting our flocks of sheep and goats, and herds of cattle, against the effects of these plants, which they eat when travelling in the bush: though it is doubtless desirable to record accurately every particular relative to this curious subject. Out of ten animals, goats and sheep, which took the poison, (three had done it of their own accord, by eating the young shoots in blossom) and to which ter with them, for eight hours after receiving the poison and the soda, and yet were found dead the next morning. In these experiments, the stomachs and entrails of the dead animals were burnt, and the flesh, well roasted, was given to two kangaroo dogs, being believed innocuous when so cooked, but on the contrary, they both died from it. The mode of administering the plant, was by pounding a handfull in a mortar, pouring water on it, and giving a common black bottle full of the preparation to the creatures. We instituted a series of experiments, by way of trying how far it is practicable to make ruminating animals vomit, by compelling them to swallow warm water and powerful emetics; but we could not succeed. I have observed that sheep, after eating too many of the young tender leaves of the dwarf *Xanthorhœa*, will sometimes relieve themselves by discharging a portion of the food from their ruminating stomachs: but it seems to me that they do this, by throwing up the food as if to chew the cud. They eject a portion, chew the remainder and swallow it down, and so on. I have had another antagonist on the subject of the poison plant, in the person of Mr. L., a surgeon, who has lately come to the Swan River to settle, accompanied by two of his brothers. He tried some experiments with the common sort, No. 203; I do not know how he prepared or administered the plant, but he arrived at the conclusion that it is perfectly inert. When he had nearly finished the trials to his own satisfaction, a native brought him the plant No. 123, (before noticed) of which he gave some to the goat on which he had made the experiments with the common kind, and going very shortly afterwards to bed, he found, on rising next morning, that the goat had died in the night, and what vexed him still more, he had an additional proof of the poisonous nature of one or the other of these plants, in the fate of a valuable European dog which he had brought with him; for, being suffered to eat part of the goat, the poor favourite expired shortly afterwards in great agony. It cannot be known with any certainty, that it was the plant last administered which caused these fatal effects, but for some months it has been ascertained to be injurious, though the circumstances which led to this belief, are too long to be detailed here. You will perceive, by the nature of the seed-vessels, and the minute stipules at the foot-stalks of the leaves, that this plant belongs to the *Leguminosæ*, and in all probability, is another species of the same genus as the most common kinds of poisonous plant. It is extremely rare, only one habitat for it yet being known.

I send you specimens of a curious *Lichen*, of the rangiferinous family, having a flattish stem, perforated like lace-work.* It grows here on exposed rocks in several places. I am not aware if you have received any kinds of *Splachnum* from Australia; I gathered one upon my journey to King George's Sound, but unfortunately mislaid the specimens, which, however, much resemble what I have seen in Scotland.

Our Flora here is very poor in *Ferns;* but one handsome species, apparently of *Lindsæa,* has rewarded my researches, and I will take care to send it to you. Among the present collection is a very minute plant, nearly allied to *Lycopodium*, but of habit so different, that it must belong to some other genus. We possess a very small *Fern,* perhaps the rarest botanical production of Swan River; for although I have known the spot for many years, I have never been able to procure more than a very few imperfect specimens;

You will probably soon see Mr. Preiss in London, for he left this country in the "Elizabeth." He speaks of having 3,000 different species; and the last time I saw him, he said, "What will Dr. Lindley think when he is told that there are 4,000 distinct plants at Swan River?" Now I do not believe that more than half that number can be found within one hundred miles of the Swan; but time will prove. I shall have the honour of addressing you from Guildford when I make up my seeds; and am, &c.,

JAMES DRUMMOND.

Hawthornden Farm, Toodjay Valley,
April 17, 1842.

Since writing to you a long letter on the subject of plants a few days since, I have received your kindly sent *Journal of Botany*, and offer you many thanks for it.

Several months ago, when we instituted the experiments on the subject of the poisonous plants in this country, I chanced to breakfast with a Mr. Slade; when, Mrs. S. being a Scotchwoman, a delicious sort of jelly was brought to the table, after the true Caledonian fashion. This jelly differed from anything I had tasted before of the sort, and Mrs. Slade informed me was made from a sort of *sea-weed*, that is thrown up abundantly on the beach near Freemantle. So, knowing that you feel an interest in productions of this kind, I requested my hostess to inform me how the jelly is prepared; and, with her permission, I enclose her note on the subject, together with the specimens that accompanied it. I have myself observed this *sea-weed* lying in great quantities as far to the north and south as I have visited the coast, and can entertain no doubt that an acquaintance with its properties might often prove the means of saving the lives of shipwrecked mariners and others: Captain Grey's party, for instance, nearly the whole of whom were almost starved; while one unhappy gentleman, Mr. Frederick Smith, a most talented person, actually perished of want, as there is too much reason to suppose, with abundance of the most nutritive of vegetable substances within his reach. Mrs. Slade writes thus :—

According to your wish, I send you directions for making that sort of jelly which chanced to be on the table when you breakfasted with us at Houghton. The substance from which it is prepared is a beautiful sea-weed, that may be picked up on the beach in great abundance, and is of an equally glutinous nature with isinglass. The name of the plant is unknown to me, perhaps, indeed, it is nameless; still its utility is so great, that I think it only requires to be known to be appreciated; and, lest I should commit some blunder in describing it, I enclose a small specimen. The weed should be collected when most plentiful, as it does not appear to suffer injury by keeping, if properly dried. Before using, it should be well washed in cold water, to remove every particle of sand or salt that may adhere to it, and then soaked for a night to soften it. In the morning the bunches will be found to have expanded very much, and even re-assumed much of that beautiful pinky hue which they exhibited when first gathered. In this state it is fit to be thrown into the preserving pan and boiled down to a suitable consistency for straining, which should be done by adding sufficient water to make it completely liquid ; but, as flavour nature of the tubers of that plant; but Dr. Milligan is speaking of the roots of *Hæmodorum paniculatum* and *spicatum*, and other individuals of that genus; for the natives do not use any roots of the species of *Drosera* for food: though, if they should prove useful as a dye, they may be obtained in any quantities.

If health permits me, I hope to be travelling in the direction of King George's Sound, where I formerly made large collections, in next October, there to gather specimens of whatever plants may differ from what I now send.

In arranging my specimens for the general collection, I strove to number them according to the *Natural Orders* ; but, not possessing any general list of plants, according to that System, I am afraid that many are misplaced ; especially as, though I have De Candolle's first volume, the book was unfortunately at Toodjay, when I was making up my plants at Guildford.

JAMES DRUMMOND.

FLORA OF NORTH AMERICA; *containing abridged descriptions of all the known Indigenous and Naturalized Plants North of Mexico, arranged according to the Natural System.* By DRS. JOHN TORREY and ASA GRAY. Vol. II. Parts I. and II.

We noticed favourably, as the work eminently deserved, the previous parts of this most admirable and important publication, in the third volume of our *Journal of Botany*, p. 292. Parts I. and II. of the second volume have now appeared, including the Natural Orders, *Caprifoliaceæ*, *Rubiaceæ*, *Valerianeæ*, *Dipsaceæ*, and the greater part of the *Compositæ*. In *Rubiaceæ* two species of the new genus *Cœlostylis* are described, one from Florida, the other from Texas (No. 321 of Mr. Drummond's collection from that country). The greater part of Part I., however, and the whole of Part II., 340 closely printed pages, are occupied with the *Compositæ* (yet unfinished), and of which the immense mass of materials in the author's possession has undergone a thorough examination and revision. Many new genera are given, particularly of Mr. Nuttall's valuable discoveries. *Liatris* contains 29 species; *Eupatorium*, 24; *Aster*, 131, yet the authors unite many supposed species into one: *Erigeron*, 40; *Solidago*, 94; *Silphium*, 11; *Rudbeckia*, 15; *Helianthus*, 37; *Coreopsis*, 26. But the great merit of the publication consists in the care and pains that have been bestowed in characterizing the genera and species from actual investigation; and in these respects, perhaps, few works can be compared with it.

It will be gratifying to the scientific world to know that Dr. Asa Gray, the talented coadjutor of Dr. *Torrey* in the "Flora of North America," just mentioned, has been recently appointed to the chair of Botany at Harvard University, formerly occupied by Mr. Nuttall; and a more competent successor to so accomplished a Botanist could not anywhere have been selected. Already Dr. Gray has most zealously entered upon his important duties, and has given proof of his fitness for the office he has undertaken, by an admirable introductory work, which he has published under the title of "*The Botanical Text-Book for Colleges, Schools, and Private*

We may congratulate English Botanists on the return to this country of Mr. Nuttall—a great part of whose life has been devoted to the advancement of American Botany, and to the duties of his Professorship at Harvard College, Massachusetts—with his noble collection of American Plants, made during his extensive travels in various parts of the United States, and through a vast extent of territory, upon the Rocky Mountains, and between that great chain and the Pacific Ocean, upon the Columbia (or Oregon River) and in California. Many of these plants are already published by Mr. Nuttall in the Transactions of the American Philosophical Society, and in other scientific journals of the United States, or are in a course of publication in Drs. Torrey and Gray's "Flora of North America," while the remaining unpublished ones will engage Mr. Nuttall's attention in this, his native, country.

Among the many botanical labours which occupied Mr. Nuttall in the United States, was a new edition of "MICHAUX'S NORTH AMERICAN SYLVA; *or a Description of the Forest Trees of the United States, Canada, and Nova Scotia, illustrated by* 156 *finely-coloured Engravings;*" with *three additional volumes, containing all the Forest Trees discovered in the Rocky Mountains, the Territory of Oregon (Columbia), down to the shores of the Pacific, and the confines of California, as well as in various parts of the United States, illustrated by* 122 *finely-coloured Plates,* "entirely from the pen of Mr. Nuttall."

The three additional volumes we learn may be had separately, by those persons who possess the former edition of Michaux. One part, at least, of the supplementary volumes is published, as we are informed by the talented author; and Baldwin, Paternoster-row, is the agent for its sale in London.

The American Exploring Expedition, which was accompanied by at least one excellent naturalist, and very acute observer, we mean Mr. Charles Pickering, has returned to the United States; and we understand that the Botanical Collection is very extensive, and peculiarly interesting from the high southern latitudes. Dr. Pickering, it is believed, will soon make a full report of the nature and extent of the discoveries; and these, together with the plants collected by the British Antarctic Scientific Voyage, under Captain James C. Ross, ought to render our knowledge of Antarctic Botany very nearly complete.

American Mosses.

The sets of DRUMMOND'S AMERICAN MOSSES, announced at p. 302 of the 3rd volume of the Botanical Journal, having been entirely disposed of, Mr. W. Wilson has, with his accustomed accuracy, from the rich stores of Mr. Drummond's general Collection, prepared several more sets of equally good specimens with the former, and running from 170 to 145 each, which are now offered to purchasers at the same rate as the former Fasciculi; viz., £2 the 100 species. Some alteration, too, has been adopted in the mode of packing them, such as folding the sides of the containing pages, so as to make the whole fasciculus flat, or equally thick in every part. Also, some loose specimens have been put into chartulæ, in certain cases, as a Supplement to those which have been fastened down with glue, thus increasing the quantity for the purchaser, where the stock is ample enough same subject published by me, in the Annals and Magazine of Natural History. These papers bear dates as follows:—1st October, 1841, 1st April, 1842, and 1st October, 1842; the latter paper having been placed in Mr. Taylor's care, as noticed by him at its conclusion, more than a year prior to its publication. It was also directly referred to as forthcoming in the article on Pollen published October 1st, 1841, and again mentioned by the Editor of the Annals about June or July, 1842.

It is much to be regretted that Mr. Aldridge was not acquainted, which I presume to have been the case, with these communications, at the time of the publication of his own articles.

I also beg to take this opportunity of referring Mr. Wilson to some observations made by me on the Hairs of the Campanulaceæ, &c., in the Annals of Natural History for October, 1841; of the existence of which, I conclude from a perusal of the interesting remarks contained in the last number of the Journal of Botany, that your correspondent is ignorant.

Mr. Wilson and myself are both agreed in the important fact, that the stigmatic function of the Campanulas ought not to be restricted to the internal surfaces of the three divergent rays, which are usually regarded as constituting the true stigmata, and herein we are both at issue with Adolphe Brongniart; but Mr. W. and myself differ in our accounts of the manner in which the pollen-tubes penetrate into the style, Mr. Wilson asserting that they enter by an aperture at the summit of the hairs, while I conceive that they penetrate the tissue of the style between the hairs.

Begging that you will do me the favour of inserting this note in the next number of the Journal of Botany, for the information of your correspondents, and of those who may be interested in the subjects to which it refers,

I remain, my dear Sir,
Yours very faithfully,
October 5th, 1842. ARTHUR HILL HASSALL.

(In justice to Dr. Aldridge I must observe, in reference to the time of appearance of the Memoirs on the "Use of the Pollen in Natural Classification," that the first of the two papers alluded to by Mr. Hassall, was placed in my hands by Dr. Aldridge on the 18th of May, 1841, and printed July 1, 1841; the second was sent to me on the 16th of February, 1842, and not printed till November 1, 1842.—Ed.)

Boissier.—*Spanish Botany and Voyage from Marseilles to Valencia.*

(*Continued from page* 411.)

Glad I was when I succeeded in hearing of a *Felucca*, called in the language of that country *Llaud*, which was bound for Cadiz, with a cargo of pipe-clay. I embarked in the evening at Grâo, but took the opportunity of walking about that place first, and found it a village consisting of a few dirty streets, inhabited by sailors, with some poor country cottages on the outskirts, which, though vacant when I was there, are crowded in summer with people from Valencia, who throng to the sea-coast for the purpose of bathing. There is hardly a family which does not resort to the *Cabanal*, as this place is called, for a few days, and spend that time in amusesix days at sea, that being the usual period occupied in passing from Valencia to Malaga. Starting before nightfall, we found ourselves next morning opposite Cullera, a small port where the people meant to take in rice, and where their delays compelled us to spend several hours. During the day we passed Denia and Xabea, situated in enchanting spots among mountains, and in the evening we doubled Cape St. Martin, whose verdant and beautiful sides, dotted with white cottages, contrast most pleasingly with its rocky and peaked summit. Once round this cape, the wind, here called *Poniente*, which was very high, and had favoured us while crossing the Gulf, became quite foul, and as night was approaching we hesitated whether to cast anchor among these rocky islets, which are the stronghold of Algerine corsairs, or to hold farther out to sea and proceed on our way. The fear of man for awhile prevailed over the fear of the elements, and we began breasting the stormy waves, which threatened to swallow up our frail little bark. Our situation grew critical; the puzzled sailors all set out vociferating contradictory orders, each giving his opinion unheeded by the rest; and finally they agreed to change our course, and to substitute a small sail for the large one, and endeavour to gain a little creek about two miles further on. The waves were high, and we were tossed dreadfully about during the whole long and weary night, but the wind having dropped a little towards morning, we got round Cape Blanco, and by noon reached a small roadstead protected by the rock of Hifac. Passengers and sailors were alike exhausted with fatigue, and quite willing to wait till the vile *Poniente* should drop, and permit of our farther progress.

Hifac is a calcareous peaked rock, a miniature of Gibraltar, and, like it, runs out far to sea, being only joined to the land by a tongue of sand. Its height may be about 600 feet. The bay which it shelters affords good protection from the southerly winds; several small vessels were there before us, and some large ones soon came in; among them some royal coast-guard ships: the national flag floated from every mast, and our little harbour soon presented a highly animated appearance.

Lovely was the landscape. On the side of the rock, at the foot of the escarpment, I observed old ramparts and a ruined village; the whole circuit of the town is formed by hills planted with *Olives*, and to the back a little valley opened among rough and jagged mountains. Impatient to behold nearer this fine vegetation, and to commence herborizing on the first spot of Spanish soil where I had seen a natural growth of plants, I caused myself to be rowed ashore, and the first object that greeted my eyes on the sandy beach, was a pretty *Cistineous plant* in full flower, which I have since discovered to be undescribed, and have called *Helianthemum caput felis.* I walked on, finding one new thing after another; and without proceeding more than a hundred yards, I made a most successful quest and enjoyed such delight as only a Botanist, first investigating a novel country, can experience. Fallow fields presented me with *Vella annua*, *Mauricandia arvensis*, and *Sisymbrium Columnæ*; while on the banks and waste spots, I found *Arum Arisarum*, *Ophrys ciliata* and *O. lutea*, *Polygala saxatilis*, *Viola arborescens*, *Astragalus Glaux*, and a host of other charming plants. *Cistus Clusii*, with its foliage like rosemary, crags; but I was not sufficiently certain of their stability, to undertake such a perilous ascent, where a slip would infallibly cause me to fall some hundred of feet into the rolling ocean beneath. The exact purpose for which these cords are so placed, I was then ignorant of, but found it afterwards explained in the *Description of the Kingdom of Valencia* by Cavanilles. In his time, and long before it, this rock of Hifac, being well adapted by its height and situation to serve as a watch-tower, was so used by the peasants, who were wont to look out from its summit for the Barbary pirates, and thence to communicate the alarm to the neighbourhood. The people climbed by these ropes, and drew up also their provisions, then taking the ropes along with them, they thus cut off all means of communication, and were perfectly safe in their impregnable position.

In the clefts of the rock sprung splendid tufts of a woody *Hippocrepis*, observed here also by Cavanilles; at first I thought it was *H. Balearica*, but have since found it new: also *Succovia Balearica*, which here, as at Gibraltar, delights in damp and shady spots; with *Scabiosa saxatilis* (Cav.) in great abundance, though not yet in flower. Rounding the mountain and passing under the ruined and ivy-covered walls of an old castle abutting on the rock, and formerly destroyed by the Genoese, I reached the southern ascent, where I was equally baffled in my attempt to attain the summit, but had considerable amends in the splendid vegetation, which was much forwarder than on the north side. The lofty slopes were graced with elegant festoons of the pink-flowered *Fagonia Cretica*; *Rhamnus oleoides, Euphorbia rupicola* (Boiss.) and other shrubs sprang from the chinks; and *Astragalus macrorhizus*, (Cav.) with some other *Leguminosæ*, covered the clayey spots. There I beheld, for the first time, magnificent *Indian Figs*, whose woody and irregularly tortuous stems, give a most peculiar appearance to the landscape. Seated beneath these trees, and inhaling with delight the sweet and balmy air, I was thinking what a boon is existence itself, under this serene sky and lovely climate, when a glance at the waves, which were becoming more and more calm, reminded me that I should do well to return to the ship.

I found that the sailors were waiting for me to start again, the weather seeming propitious; but a foul wind got up during the night, and after struggling against it the whole of next day and evening, we came to anchor but a few miles south of Hifac early on the following morning. This time we were opposite Altea, a fine town in our sailors' opinion, and which they promised us a great treat in seeing. I gazed at the coast, and could descry nothing: when approaching nearer, I contrived to distinguish some houses, built in an amphitheatre on the brink of the water, and whose flat roofs and grey hue caused them to be absolutely lost against the hill. It was Sunday; on landing we found that the presence of the *Titeras*, or *rope-dancers*, who were about to exhibit, caused much commotion; the peasants mounted guard with muskets at the entrance of a court where *la funcion* was to take place, and which was literally overflowing with children, who clambered up the neighbouring walls and trees to gaze. We were gravely presented with gratuitous tickets, and invited to be present; but the whole affair was so much like a village frolic at home, and presented so little of national peculiarity, that I was heartily weary, and enjoyed much more rally *impromptus*, which suited the time; and a treble row of spectators surrounded us, and kept applauding the dancers with their exclamations, "Anda guapo! Anda salera!" The cheerfulness and delight of these poor people were perfectly exhilarating to me.

Round the town were fine *Orange gardens* still full of fruit; an important production in the south parts of the kingdom of Valencia and in Murcia; for the greater portion of the oranges sold in France as *Maltese Oranges*, come from hence. *Cotton* is also extensively cultivated at Altea. The land is fertile and irrigated by streamlets of the clearest water, in which lives a pretty *shell*, *Paludina buccinoides*, which Férussac first found in Andalusia, and afterwards abundantly in Barbary.

The obstinately contrary wind made us almost despair of ever getting beyond the shores of Valencia, when on the evening of the second day of our halt at Altea, we saw our people running and calling "Levante! Levante!" This much desired and favourable wind continued to blow, we hurried quickly to the shore, leapt into the boat, and presently were bounding across the swelling waves. A few minutes more and the "*Llaud*" had spread all her canvas to the breeze. We sat on the deck and wondered at the rapidity with which we cut through the water, and admired the smoothness of our progress as we hurried before the wind and left a luminous track on the billows. Daylight showed only a misty confused outline of those mountains we had quitted the preceding night, we had already reached the shores of Murcia, and were off the Tower of *La Estancia*, and near the low beach where those plants grow abundantly from which *Barilla* and *Soda* are made. We passed the *Hormigas*, little desert islets covered with *Spartina*, and Cape Palos; but no sooner had we descried the new line of coast, which rises in mountains as far as Cape de Gatte, than the unlucky "Poniente" began to blow again. Once more we dropped anchor in a picturesque spot, called *Porman*, a circular basin, barely a mile across, surrounded with rocks, and entered by a narrow channel, which is defended by a tower. Some other little craft were here before us, and soon all hands were engaged in pulling ashore and fixing the cables, &c. In the evening we saw the picturesque torch-fishing, which is so commonly practised in the Mediterranean during the fine summer nights. One of the caverns, inhabited by the fishermen, and brilliantly lighted inside, glared among the black rocks by which it was surrounded, like the yawning jaws of an infernal dungeon.

Two days yet ere we reached the wild mountains near the Cape de Gatte. All this southern coast of Valencia is fringed with towers, originally built to guard against the Algerine Corsairs, but now solely used to arrest the contraband trade so boldly carried on with Cadiz. They are low, all alike, near each other, sometimes furnished with one or two small guns, and entered by a door placed half way up the building. One was most picturesquely situated on a rock, called by our sailors "Mesa de Roldan," or *Rowland's table*. The story goes that this hero sliced a mountain in two with his sword, flung half into the sea, where it yet forms an island, and of the rest shaped this wild coast, cutting it out into gulfs and promontories. It was strange to meet with tales of this warlike wight, so far as the south coast of Spain nents, where the elevation of the mountains arrests the land-winds and exposes the navigators to long calms, which we justly dreaded and soon experienced, compelling us frequently to go far back to obtain a shelter, and tempting us to rail alike at the sea, at our small and inconvenient vessel, and at the wretched food to which we were reduced; for all our provisions from Valencia being exhausted, we had nothing to eat but a wretchedly small pittance of ill-cooked rice. Our sailors, well accustomed to such a life, lay all day long stretched on the deck with true Spanish *nonchalence*, drawing monotonous sounds from their guitars, and from another instrument with metallic strings, which they struck with a piece of copper, and which is called a *citra*. Thus time went wearily on, till the current carried us through the Strait, and we saw the white houses of Motril, where we should unload a part of our cargo. Delighted with the day's respite thus afforded us, we hastened to land, but had no sooner reached the shore than we were compelled to halt till the *Sanidad* should arrive from the town and permit us to walk about. And as the *Sanidad* first had to rise, then to breakfast, and then to smoke a *cigarito*, we had to wait a long hour, when it actually arrived, in the form of two brisk communicative gentlemen, with whom I soon made acquaintance, and we proceeded together to the town, a short mile distant, passing through a well cultivated plain, watered by a stream, fringed with white *poplars*, and interspersed with cotton-grounds and tropical-looking *sugar-canes*. This latter culture was introduced by the Arabs, and may be observed all along the coast from Velez to Motril, filling the mouths of the vallies, wherever the ground is flat and fertile. It was once far more extensive, but the discovery of the New World dealt it a fatal blow. We looked into an *ingenio* or sugar manufactory, where the process is very rudely carried on; and the sugar is coarse grained, ill-coloured, and not well flavoured. Such as it is, however, it sells well in the country, and the proprietors declare that any improvement in the article would not answer, nor enable them to compete with the American sugar.

The houses at Motril are but one story high, flat roofed, and covered inside and out with a thick layer of dazzlingly white chalk. Not a trace of windows could be seen, the mild climate rendering them needless; air and light pervade alike these dwellings, the richest of which are adorned with balconies, full of *pinks*, *mesembryanthemums*, and the brighest flowers that blow.

The description in Don Quixote had prepared me for the kind of *posada*, which, passing through ill-paved, tortuous streets, awaited us, so that I felt no surprize at seeing the dilapidated room and scanty furniture, consisting of a table and some ordinary stools, which formed all the accommodation of this place of refreshment. The general aspect and costume of the people recalled to me that of the Neapolitans, and it was striking to mark the similarity of manners, too, that exists between these inhabitants of peninsulas, situated under the same latitudes. In the market were sold sugar-canes, *canas dulces*, cut into strips, for eating fresh; they contain, in their pith, an abundant and refreshing juice, of which the molasses flavour quickly cloys on the palate.

Issuing from Motril in the direction of the mountains, I *leta* on the left, and then the *Mulayhacen* more towards the right. Sheltered by such a lofty screen of successive elevations, this coast enjoys a delightful climate, and produces many tropical vegetables, even *coffee* succeeding in some of the gardens. Frost is unknown at Motril; and I was assured that the snow, which at this very period, was covering the higher parts of the *Sierra de Lujar*, never descended lower on its sides than to a point of which I calculated the elevation to be about 1500 feet.

The first fruits of the *Flora Boetica*, which I now gathered, were such as not to diminish the hopes I had cherished. Among a host of other plants, I may mention the *Ononis Sicula; Lavandula multifida*, plentiful on the arid sandy sea-shore of Andalusia, and almost always in flower; and *Convolvulus althæoides*, which graced the hedges with its lovely pink blossoms. I was also struck with a charming little leguminous flower, with prostrate stems and silvery foliage, that I have since described under the name of *Leobordea lupinifolia*, and still more with a curious shrub belonging to the *Solaneæ*, and having a most exotic aspect and greenish flowers; it is the *Atropa frutescens* of Cavanilles. The irrigated fields between the town and the sea, presented an entirely different vegetation; there grow *Emex spinosus*, *Lavatera Cretica, Fumaria capreolata* and *agraria*, with several species of *Silene;* the banks of the streams were clothed with *Ranunculus trilobus* and *R. muricatus*; and finally, at the instant of embarking, I gathered *Brassica Tournefortii*, already in fructification.

Next day, after making but little progress, came another forced halt at Velilla, scarcely a dozen miles west of Motril; and now my patience being wholly exhausted, I determined to leave my luggage on board the felucca, and to accomplish the remainder of the distance by land, in company of an Hidalgo of Velez, my fellow voyager. This was on the 15th day of our voyage; and we quitted the little craft, vowing most solemnly not to set foot on board a *Llaud* again, and to abstain for ever from boiled rice. Being near Almuncçar, we determined to spend the night there; and joyfully entered the posada, which looked like a palace, when compared with our cabin in the *felucca*. Our delight was somewhat quelled when we investigated the walls, and found even the smallest chinks crammed with hosts of bugs, quietly waiting till darkness should favour their attacks. These detestable insects, called *Chinchas*, are, in my opinion, the greatest scourge to the traveller who visits Spain, for few houses are free from them. I tried all manner of plans to defend myself, and found, by experience, that the most efficacious mode is to carry the mattrass to the middle of the room, far from the walls, and to isolate it also by sprinkling water on the floor all round, the wet forming a barrier which these creatures rarely pass.

Almuneçar is that part of the coast which is least distant from Grenada, thirty miles; and we had nearly forty to go before reaching Malaga, which formed two days' journey, because of the great length of the Spanish league. It was a good while ere we could procure mules for our conveyance, this being the fishing season, when these animals are all in requisition to convey the fish to the capital. Quitting the fields of *Sugar-canes*, which fill the bottom of the vallies, we began to climb the side of a mountain, bordering the coast, and took our way by steep and difficult paths; sometimes along a sharp ledge, whence we looked down several hundred feet on the ocean below or descending to the beach, where a ravine intersected the mountains; and anon scaling the opposite counterscarp. These perpetual *détours* triple the distance; but the beauty of the scenery made me ample amends. All the slopes were covered with that vegetation, termed *monte baxo* in Andalusia, and quite corresponding with the *Macchie* of Corsica; it consisted of coppices, composed of *dwarf Palms*, several kinds of *Cistus*, *Lentisks*, *Rosemary*, *Rhamnus lycioides*, and *Daphne Cnidium*. Besides these plants, *Phlom*[illegible]*rea*, *Ballota hirsuta*, and *Artemisia Barrelieri* and [illegible] both out of flower, were the most characteristic sp[illegible]e hills. The loftiest ground that we passed over was about 1,000 or 1,200 feet above the sea, and differed little in vegetation, except that I observed there a very few plants of the *Cistus ladaniferus* and *Helianthemum origanifolium*, the latter having dull green foliage, and inhabiting shady spots. There was one very thick bush, of which I regretted that time would let me gather but a solitary specimen; for I herborized as we travelled along, and could not quit our little party. This shrub proved to be a new species of *Celastrus*, remarkable as the only European individual of this genus, and of which the country people assured me that it possessed the remarkable virtue of effectually sheltering from the wind any person who stood behind it, a quality satisfactorily ensured by its very thickly tufted branches, without the intervention of any miraculous power. In shingly spots grew *Linaria villosa* and *Calendula suffruticosa*, the foliage of the latter diffusing a powerfully bituminous odour; while, close to the shore, and upon the sand, was *Aloe perfoliata*, forming immense close tufts, and often seen in such remote and wild places, that I incline to consider it really indigenous.

Our small party here received an increase of three or four peasants, coming from Berja, in the Alpujarras, and going, they said, to the environs of Algesiras, a destination which in this country, implies that they were engaged in the contraband trade at Gibraltar. Indeed, our new friends presently told us as much; and I was amazed to learn how widely this traffic is diffused, thanks to the unsettled condition of the country. Some trusty individuals are employed by the smugglers to make their purchases at Gibraltar, and to put them on board a small vessel, which they first run over to the coast of Africa, so as to give the appearance of coming straight from the East. Meanwhile, a party of a hundred, and sometimes even two hundred men, comes to a remote part of the mountainous coast, bringing the needful number of beasts of burthen; and after waiting two or three days, at a given signal, the tobacco and other goods are landed and speedily dispersed over the interior of the country.

Sometimes the coast-guards are deceived, or overawed; but oftener they are bribed to wink at this traffic, which is so universal, that I scarcely spoke to a peasant in the Grenada and Malaga provinces, who did not own to having been a sharer in one or more expeditions, and talk of them too with a kind of pleasure, enhanced by the excitement and risk, and by the reward of three or four piastres, which every man receives for his own trouble, and twice as much for every mule that he brings.

At the foot of one of the mountains that we had to pass, we met two men, who warned us to be on our guard, and told us that they had just been robbed higher up the pass. Arms we had none, except one hunting gun, among us all, and no powder or shot; but, determined to put a bold face on the matter, we set the stoutest Alpujerreño forward, graced with this single redoubtable weapon, while I shouldering my barometer, and another carrying its empty case, with a cane inside, thus conferred a most warlike aspect on two others; and either by the awe we struck into the robbers' hearts, or because there were no robbers there, we passed on our way in safety, and met with no detention. There are hardly any regularly organized bands of robbers in this ment of the dwelling. There was a court-yard, into which all the apartments opened, or rather a suite of galleries divided by very few doors and partitions, all being so contrived as to impede in the least possible degree the circulation of air, and to admit but little light. Thanks to this style of building, the houses here are cooler, even in the height of summer, than ours in temperate climates. The walls of the rooms are perfectly bare, but beautifully white and clean; the articles of furniture few in number, and all in wood and rushes; the sole ornament consisting of a glazed cabinet in which the plate was set, prettily arranged with little china figures. This piece of furniture is common throughout this neighbourhood, and I met with it in most of the houses in the country.

Quitting Nerja we traversed several low hills, more barren than those which we had crossed over in the morning. The vegetation I have described, here yields to *Cytisus lanigerus*, *Genista umbellata*, *Cistus Monspeliensis* and *Passerina dioica*. Two leagues before reaching Velez we came to a lovely plain, stretching between the sea and the vine-clad* hills, that, dotted with villages, extend to the base of the *Sierra Tejada*. The soil was generally well cultivated, the fields often reaching to the very beach, and guarded from the encroachments of the wind-wafted sand by thick hedges of *Indian Fig* and *Agave*. Night, which in these climates comes on very suddenly, overtook us when we were still some distance from our goal; but the knowledge of the country which my friend possessed, with the instinct of our beasts, conducted us safely to Velez. The *Posada* of Ventura, where we alighted, was more comfortable than any previous one, and the walls of the rooms containing no treacherous crannies, I enjoyed some of the rest which is so needful for the traveller who has, partly on foot and partly on mule-back, accomplished eight Spanish leagues of such roads as those of this neighbourhood.

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* "——Mighty wine,
The blood of Velez' scorched vine."

Velez, which I devoted the next day to examining, is a neat town, with a population of six to eight thousand souls; the streets are wide, and the houses more than one story high. Sheltered at the back by lofty and close placed hills, and perfectly protected from northerly winds, it is considered one of the hottest places on the coast, which is further attested by its gigantic hedges of *Indian Fig*, on which, as near the Bay of Cadiz, are seen abundance of *Chameleons*. Popular opinion goes that these animals live on air, and thus they are often ruthlessly kept in the Andalusian houses on little wooden rings hung from the ceiling, where they certainly exist several months without food, but in a languishing and almost motionless state.

The largest fields of *Sugar-cane* that I had seen anywhere, extend round Velez. Parties of labourers were engaged cutting the stems, and conveying them to the "*Ingenio*," or manufactory, in carts, upon four solid wheels, and provided with a trellis, formed of thick sticks, set upright on the body of the cart. This clumsy machine reminded me of that in which Don Quixote was conveyed home to his own village, bewitched, and in captivity. A wood of *white poplars* grew here, near a stream, as they do occasionally on the warm parts of the coast, and are almost the only trees to be seen wild in similar spots. In this damp situation, I found several delicate plants, that require shelter from the sun's rays, as *Œnanthe apiifolia*, and several species of *Vicia* and *Lathyrus*.

After spending a day quickly and pleasantly at Velez, where my friend and his family gave me the most courteous entertainment, I started again for Malaga, promising myself that I would soon return to this delightful spot. The road became wider and better, only quitting the shore to cross some rocky promontories, and occasionally passing over the shifting sands of the beach. To the right is a line of the mountains and hills, called the *Chapas* of Malaga, planted with vines, of [illegible] the fruit is chiefly used to make *pasas*, or dried r[illegible]hich are prepared either on bricked floors, or in th[illegible] itself. Nothing can ever be more cheerful than the aspect of the country, above all during this spring season, when the sun has not destroyed all verdure. Among the *Agave* and *Cactus* hedges, which surround the plantations, I gathered *Crambe filiformis*, with its long, twiggy, and leafless stalks, the *Phagnalon saxatile*, and especially the magnificent *Aristolochia Boetica*, which was everywhere weaving around the other plants its climbing stems covered with reddish-brown, pipe-shaped flowers. On the barest hills grew *Statice sinuata*, whose deep blue blossoms recommend it as an ornamental flower for nosegays, under the name of "*Sempreviva azul*," *Blue Everlasting*. The very sea-sand, generally so barren, here borrows a rosy hue from the numerous flowers of *Matthiola tricuspidata*. Crowds of peasants and workmen, and long strings of asses and mules, betokened the vicinity of a large city, and at every step we met with *Ventorillos*, or little booths, often merely consisting of a foliaged roof, where the muleteers can purchase wine, brandy, bread, fried *sardinas*, and where the *Alcarraza*, a kind of vase made of porous earth, and antique form, always stands replenished with cold refreshing water, presented gratis to every traveller. Here, as in the environs of Malaga, the lack of springs and rivers necessitates the cultivator to water the earth by means of wells, sunk below the level of the sea, and whence the water is drawn by means of two clumsy wheels, beset with earthen pots, and slowly turned by oxen.

Rounding a rocky point, the great tower of the lighthouse, which came suddenly to view, announced my vicinity to Malaga. This city is admirably placed, backed by heights, and surmounted by the old Moorish castle of Gibralfaro, that crowns one of the loftiest summits. Beyond, stretches a vast plain, or *vega*, skirted to the west by the snowy peaks, eight leagues distant, of the mountains of Ronda; while nearer, the less elevated *Sierra de Mijas* closes the bay to the southward, and conceals the line of coast that continues to Gibraltar. I alighted at the *Fonda de Esperanza*, one of the best hotels in all Spain, where I was greeted, to my great satisfaction, with those many little comforts of civilized life, the value of which is only appreciated by their loss. The day of my arrival being a grand holiday, the birthday I believe of the Queen, all the ships were adorned with their flags, and an immense crowd streamed through the *Place de la Constitution*, where an excellent military band was performing the finest pieces of Rossini and Bellini. The night was clear and starry, the air sweet, and the cupola of the cathedral, its outline elegantly exhibited by a line of lights, shone in the sky like a new constellation.

(*To be continued.*)

Figures, with brief descriptions, of three species of PODOCARPUS;

by W. J. H.

(TABS. XXI. XXII. XXIII.)

Having had occasion to study the species of *Podocarpus* of New Zealand, my attention has been directed to those from other countries, which appear in general to have been so little understood, or are represented in works of such rarity, that it has been thought that figures of some of them would be acceptable to our readers.

botanist, save Richard, who seems to have gathered it in the island of Montserrat, and represented a small sprig in his Mémoires sur les Conifères, as illustrating the genus *Podocarpus.* It is probably a native of other islands in the West Indies, and perhaps of the tropical continent of South America. At any rate, I possess a *Podocarpus* from Huranda, in Peru, collected by Ruiz and Pavon, which I can hardly distinguish from this, except in its smaller foliage. Its male spikes are collected in threes at the apex of a peduncle half as long as the leaves; but I am not acquainted with the female flowers or fruit. The *Podocarpus Lamberti varæ. angustifolia,* Klotzsch, *mst.* (in Herb. Reg. Berol.) from Brazil, again, has leaves still smaller than my Peruvian species just mentioned, with male spikes exactly similar, and fruit quite resembling that of the *P. coriacea;* and lastly, the Brazilian *Podocarpus Sellowii,* Klotzsch, *mst.* (in Herb. Reg. Berol.), has, in general, leaves always of the same shape as *P. coriacea,* but twice the size; while in one specimen, in my possession, with young fruit, the identity of the two can scarcely be called in question.

TAB. XXI. *Podocarpus coriacea, nat. size;* f. 1, fruit, *magnified.*

PODOCARPUS THUNBERGII. *Hook.*

Foliis coriaceis oblongo-lanceolatis uninerviis obtusis cum mucrone basi in petiolum perbrevem sensim attenuatis utrinque concoloribus, pedunculis solitariis unifloris longitudine receptaculi bidentati, drupa elliptico-subrotunda. (TAB. XXII.)

Podocarpus latifolia. *Br. in Horsf. Pl. Jav. Rar. p.* 40. (*non Wall*).

Taxus latifolia. *Thunb. Fl. Cap. ed. Schult. p.* 547, *non Br.*)

HAB. Cape of Good Hope. In woods of Houtniquas, Grootvader's Bosch, and elsewhere. *Thunberg.*

The representation of this, in the accompanying plate, will give a better idea of the species than can be formed by words. It was referred by Thunberg to *Thuja,* and called by him *latifolia,* in comparison with the *Podocarpus* (*Taxus,* Th.) *elongata*, another Cape species of the genus, and the one on which the genus itself was founded by L'Héritier. The specific name I have not retained, because that had been applied, and with greater propriety, to another *Podocarpus*, before it was determined that the present was really of the same genus. *P. Thunbergii* is described as a lofty tree, and known to the Cape colonists by the name of *Geelhout*; and it would appear to yield a wood of much value in South Africa; for Burchell says, that the greatest part of the timber used in building, and indeed for every other purpose, is the *Geelhout* (Yellow-wood, including, according to the same author, not only *P. Thunbergii*, but *P. elongata*) and the *Stinkhout* (Stinkwood, *Laurus bullata*) figured in the 1st series of this Journal, vol. iv. p. 418, tab. xxiii.

This *Podocarpus*, as well as the preceding (*P. coriacea*) belongs to the first of the four sections into which Mr. Bennett, in his elaborate remarks on *P. cupressina* Br., in Horsfield's "Plantæ Javanicæ Rariores," divides the genus, and which he thus distinguishes:—"*Flores* dioici. *Amenta mascula* axillaria, solitaria v. aggregata: *Flores fœminei* axillares, pedunculis (ramulis brevibus) nudis suffulti; receptaculo aucto carnoso ex axi spicæ abbreviatæ et sæpius 1-floræ, cum squamulis duabus v. tribus, apicibus tantum liberis,

Hab. Mountains of Pundua, a lofty range on the eastern parts of Bengal, not far from the district of Silhet. *Francis de Silva.*

My own specimens of this remarkable and very distinct plant, exhibit only the male amenta. The fruit is copied from Dr. Wallich's figure. I do not find the leaves by any means constantly opposite, nor, consequently, the peduncles. It is placed in Mr. Bennett's 4th section of the genus "*Dammaroideæ,*" which he thus distinguishes:—*Flores* monoici. *Amenta* mascula fasciculata; fasciculi pedunculis (ramulisve brevibus) oppositis, axillaribus, nudis suffulti: *Flores feminei* oppositi, similiter pedunculati; receptaculo aucto carnoso ex axi spicæ abbreviatæ 1-floræ, cum squamulis pluribus apicibus tantum liberis coalita; squamula terminali bracteolæ subtendentis vicem gerenti.—*Folia opposita, ovata, nervo medio destituta stomata in utraque pagina gerentia.*

Tab. XXIII. Male branch of *Podocarpus latifolia, nat. size.* f. 1. Anther *magnified;* f. 2 (from Wallich) fruit, *nat. size.*

An arrangement and definition of the Genera of Ferns, with observations on the affinities of each genus. By J. Smith, A. L. S.

(Continued from page 438, of this volume).

Tribe VII. Cyatheæ, *J. Sm.*

Sori round, globose, intra-marginal, medial or axillary, generally furnished with a calyciform, or lateral interior attached *special indusium*; or naked, or furnished with articulate hairs that involve the sporangia. *Receptacle* elevated, globose, or columnar. *Sporangia* usually sessile and compressed.

Obs. The number of species, described by authors as belonging to this tribe, does not exceed 80, and I am inclined to consider that much above the real number; their determination being difficult, on account of the specimens in herbaria consisting, usually, only of small portions of fronds, and which often present different appearances, according to age or the part of the plant from which the specimen was taken. From my own observation, I am satisfied that authors, when characterizing presumed new species (of ferns generally), do not make due allowance for the variations consequent upon age, and the influence of local causes connected with the place of growth.

The species constituting *Cyatheæ* (with the genus *Dicksonia*) are truly the giants of the fern race, having erect, arboreous, usually hollow trunks (*rhizoma*), often attaining the height of fifty or more feet, and bearing a crown of large, generally decompound fronds, each sometimes nearly 20 feet in length. Their stipites, or bases, being either permanent and becoming indurated, form part of the solid structure of the trunk; or they are deciduous, and separate from the trunk by a distinct articulation, which is permanently indicated by oblong rhomboid marks or scars, disposed in a spiral series on the trunk. With the exception of the genus *Hemitelia*, the venation of this tribe is direct and free, with the sori situated between the base and apex, or on, or near, the axis of division of forked veins; the position of the sori distinguishing *Cyatheæ* from the preceding tribe *Dicksonieæ*, where the sori are always terminal and marginal.

the presumed obliquity of the ring in *Cyatheæ* takes place merely by mechanical pressure, each sporangium being inclined upwards, sessile, and compactly seated round an elevated receptacle; therefore the pressure upon each other causes the lower part to become flattened and attenuated, especially on the inner side, which readily accounts for the not truly vertical direction of the ring.

The general habit of *Cyatheæ* may be viewed as analogous to those species of *Polypodium* and *Lastrea*, that have large decompound fronds; and as this tribe contains genera with naked sori, and also genera having indusia analogous to several genera of *Aspidieæ*, the arboreous habit and the elevated receptacle must be considered as the only technical characters that distinguish *Cyatheæ* from *Polypodieæ* and *Aspidieæ*.

119. SCHIZOCÆNA, *J. Sm.*

(Cyatheæ *sp.*, *R. Br.*, *Wall.*, *Hook. et Presl.*)

Veins pinnately-forked; *venules* direct, free; *sori* medial. *Indusium* globose, calyciform, opening in 4-6, nearly equal, spreading laciniæ. *Receptacle* globose.

Fronds *smooth, linear-lanceolate, or pinnate, rarely bipinnate, margin of segments entire.* Sori *produced in* 2 *or* 3, *nearly regular, transverse rows.*

Examp. 1. S. sinuata (*Hook. et Grev.*) 2. S. Brunonis (*Wall.*) 3. S. lævigata (*Willd.*)

Illust. Hook. et Bauer gen. fil. t. 2. *Hook. et Grev. ic. fil. t.* 106.

Obs. Mr. Brown, in the *Prodromus Floræ Novæ Hollandiæ*, p. 158, observes that, besides the genuine species of *Cyatheæ* where the sori are seated on the division of the veins, there are species from the Moluccas, in which the sori are produced on the middle of the veins; which character, together with the very distinct habit of that species and its allies, has induced me to constitute of them the present genus. I regret not having seen specimens of *Cyathea marattioides* of Willdenow; that species, according to Presl, appearing to me to belong to this genus. Presl also quotes *Cyathea Mexicana*, as having medial sori; but the individuals of that species that have come under my observation exhibit axillary sori, and do not differ in habit from true *Cyatheæ*.

120. HEMITELIA, *R. Br.*, *J. Sm.*

(Cyatheæ *Sp. Auct.*, Cnemidaria, *Presl.*)

Veins simply or pinnately forked, the lower pair of *venules* (of the lowest fascicles) oppositely anastomosing, forming an angular costal arch, the superior venules all free. *Sori* medial. *Indusium* semicalyciform, interiorly attached. *Receptacle* globose.

Fronds *bipinnatifid, smooth, or aculeate, or squamiferous; laciniæ obtuse or lanceolate, broad, slightly falcate.* Sori *uniserial, sub-marginal, or irregular.* Indusium *becoming reflexed, lunulate.*

Species. 1. H. speciosa, *Kaulf.* 2. H. grandifolia, *Spreng.* (Cnemidaria Kohautiana, *Presl.*) 3. H. obtusa, *Kaulf.* 4. H. horrida, *R. Br.* 5. H. serrata, *J. Sm.* 6. H. monilifera, *J. Sm.* 7. H. marginalis, *J. Sm.*

Obs. The name and technical character of this genus were first pointed out by Mr. Brown, and that learned author genus, as restricted by me, yet its venules do not actually anastomose, thus affording another illustration of the transition of structure.

Hemitelia has the smooth, shining habit of the preceding genus, from which it is distinguished by the indusium being attached only half round the base of the receptacle, as it becomes reflexed, presenting the appearance of a half cup.

121. CYATHEA, *Sw.*, *J. Sm.*

(Cyatheæ *sp. Presl,* Disphenia *Presl.*)

Veins costæform, pinnate; *venules* forked, direct and free. *Sori* axillary. *Indusium* globose, its apex operculæform, becoming calyciform, its margin then entire, or unequally laciniated. *Receptacle* columnar. *Sporangia* compressed.

Fronds *large, decompound*; *ultimate pinnules pinnatifid, usually articulated with the rachis. Stipes frequently aculeate or squamose.* Sori *universal, often close to the midrib of the laciniæ.*

Examp. 1. C. arborea, *Sw.* 2. C. medullaris, *Sw.* 3. C. affinis, *Sw.* 4. C. dealbata, *Sw.* 5. C. excelsa, *Sw.* 6. C. muricata, *Willd.* 7. C. aculeata, *Willd.* 8. C. elegans, *Hew.*

Illust. Hook. et Bauer, Gen. Fil. t. 23. *Schk. Crypt. t.* 133.

Obs. Since I adopted my views of the genera of this tribe, I have again examined the whole in order to determine the value of the character assigned by Presl to his genus *Disphenia*, which he founds upon two species, viz., *Cyathea arborea* of Swartz. and *C. aculeata* of Willdenow. The genus *Disphenia* is characterised, as distinct from *Cyathea*, by the sporangiferous receptacle of each series being bipartite, that is, consisting of two slightly diverging flattened columns included within each indusium or cup, as represented at t. 32 of *Schkuhr's Cryptogamia.* I have examined a number of specimens, of what are understood to be the two species, and I will admit that there is such a structure; but it is of such a rare occurrence that no value can be placed on it as a generic distinction, being occasionally found, only in a few of the sori, situated near the principal rachis of the pinnules, and is evidently an accidental appearance, and may be accounted for, according to the law that determines monstrosities or organs with double parts, and in the present case may be as follows. The apparent, or evident position of the sori of *Cyathea*, is axillary; that is, seated on the axis or forking of the veins; but on a careful examination I have found that such is not always the case, the sori being often seen situated a little beyond the axis, on the exterior branch, which, from analogy, may be considered as the normal position; in such instances only one simple receptacle is produced in the usual way, and to account for the two receptacles in one cup, it is simply to assume that both the venules have a normal tendency (as in other cases) to produce each a receptacle, which by their contiguity or confluence in the axis of division of the vein, form but one series, the two receptacles occasionally remaining distinct, or becoming so by desiccation. Such being my view, I do not hesitate in rejecting the character of *Disphenia* as untenable.

122. ALSOPHILA, *R. Br.*, *J. Sm.*, *Presl.*

(Hemiteliæ *sp.* *R. Br.* Hemitelia *Presl.* Chnoophora it is difficult to discriminate them even by their technical characters. This genus was first characterised by Mr. Brown as distinct from *Cyathea*, by the sori being furnished with a "*lacerated, often obsolete, indusium*," and from *Hemitelia* by the sori of the latter being situated on the middle of the veins; but the species now forming true *Hemiteliæ* are distinguished by part of the venation being anastomose, which character, as I have already noticed, excludes two of the original species, that are now placed by me in *Alsophila*. In the original definition of *Alsophila*, the position of the sori is stated to be axillary as in *Cyathea*, but I have before noticed that the sori in the latter genus are not always strictly axillary, and such I find is also the case with *Alsophila*, which circumstance favours the view I have taken in extending the character of this genus, thus including certain species that exhibit both forked and simple veins, or sometimes all simple, the position of the sori in such being usually medial. The form of the indusium (when present) is also highly variable; in some it consists of a very small interior attached scale-like membrane, occasionally so indistinct that it is difficult to be seen; in others it is entirely wanting, its place being usually occupied by numerous articulate hairs, that, like the indusium, rise from the base of the receptacle; while, in other species, the membranous indusium is so fully developed that its base nearly surrounds the base of the receptacle, almost forming a complete cup, as in *Cyathea*, differing only by the presence of an open sinus on the exterior side. This being the case, it becomes difficult to say that such species do not belong to *Cyathea*; especially since, sometimes, the indusium of the latter becomes much lacerated. Therefore, on viewing the great uniformity of habit in all the species, and the gradual modifications of structure in venation, position of the sori, and nature of the indusium, I have been induced to place the whole under *Alsophila*. A careful examination of a considerable number of species has enabled me to arrange them in groups, as follows:—

†. Hymenostegia, *J. Sm.* *Sori furnished with a lateral indusium, which is more or less evident, or it is sometimes nearly calyciform.*

* *Sori axillary.*

Examp. 1. A. australis, *R. Br.* 2. A. aspera, *R. Br.* 3. A. extensa, *R. Br.* 4. A. *temulata*, *R. Br.* 5. A. tenera, *J. Sm.* 5. A. serrata, *J. Sm.*

* * *Sori medial or basial.*

Examp. 7. A. Capensis, *J. Sm.** (Hemitelia, *R. Br. Presl.*) 8. A. multiflora, *Presl.* (Hemitelia, *R. Br.*) 9. A. lævis, *J. Sm.* 10. A. strigosa, *J. Sm.*

† † Trichostegia, *J. Sm.* *Sori furnished with numerous articulated hairs, or sometimes naked.*

* *Sori axillary.*

Examp. 11. A. glauca, *Blume*, (Polypodium contaminans,

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* Since the above was written, my attention has again been called to this subject by the circumstance of Mr. Gardner having, at page 438 of the present volume of this Journal, given some observations on the character of the *Hemitelia.* Mr. Gardner agrees with me that the technical character of that

12. A. excelsa, *R. Br.* 13. A. lepifera, *J. Sm.* 14.
macensis, *J. Sm.* 15. A. nitens, *J. Sm.* 16. A. late-
, *Presl.* (Polypodium *Wall.*) 17. A. munita, *Kaulf.*
.. vestita, *J. Sm.* 19. A. aculeata, *J. Sm.* (Polypodium
.) 20. A. humilis, *J. Sm.*

r. To this group also belong 8 or 10 species described
igured in Martius' *Cryptogamia*, and which form his
section *Dicranophlebia.* The difficulty of determining
ecies of this genus, otherwise than by actual compari-
f specimens, makes it probable that some of those that
e enumerated as new, may be already described.

* * *Sori medial.*

amp. 21. A. procera, *Mart.* 22. A. compta, *Mart.*
. acuminata, *J. Sm.* 24. A. brevis, *J. Sm.* 25. A.
ata, *Kaulf.* (Polypodium, *Sw.*)

s. The last quoted species differs somewhat in habit from
st of the genus, having more the appearance of a large
odium; but the sori being furnished with articulated
, and the receptacle slightly elevated, induce me to
it here.

st. Hook. et Bauer gen. fil. t. 9, 21, 42, A. *Hook. et*
ic. fil. t. 213, 214, 215. *Martius' Crypt. Bras. t.* 40
inclusive.

123. GYMNOSPHERA, *Blume.*

(Polypodii *sp. Wall.*)

ins costæform, pinnate; *venules* simple, direct, free.
medial, naked. *Receptacle* elevated, columnar.

onds *bipinnate; pinnules entire, crenate, or pinnatifid,*
h, squamose, or aculeate. Sporangia *compact.*

amp. 1. G. glabra, *Blume.* 2. G. squamulata, *Blume.*
. gigantea, (*Wall.*) 4. G. aculeata, *J. Sm.*

st. Hook. Gen. fil. t. 100.

s. This genus differs from the preceding, chiefly in
and in its sori being destitute of an indusium, or articu-
hairs, the elevated receptacle constituting the only

character (besides being arboreous) that distinguishes it from *Polypodium*; while even that character is scarcely tenable in *Gymnosphera aculeata*, a native of Trinidad.

124. TRICHOPTERIS, *Presl.*

Veins pinnately-forked, *venules* simple, direct, free, their apices clavate. *Sori* medial, trichophorous, laterally confluent, forming a transverse compound, linear sorus. *Receptacle* oblong, elevated.

Fronds *bipinnate*; *pinnules lanceolate, entire, serrate towards their apex, coriaceous, articulated with the rachis.*

Species. 1. T. excelsa, *Presl.* 2. T. elegans, *Presl.* (Alsophila, *Mart.*)

Illust. Hook. et Bauer, gen. fil. t. 34. *Schott, gen. fil. t.* 5. *Mart. Crypt. Bras. t.* 37, 38.

Obs. Very distinct in habit from *Alsophila*, though difficult to be distinguished by any peculiarity in the technical character of its sori.

125. METAXYA, *Presl.*

(Polypodii *sp. Willd. Hook.* Amphidesmium *Schott, in obs.*)

Veins simple, or rarely forked, parallel, direct, free. *Sori*

narks on the Vegetation of the Feejee Islands, Tanna, New reland, and New Guinea. By RICHARD BRINSLEY HINDS, Esq., *Surgeon, R.N. With an enumeration of Plants there ollected; determined and described by* GEORGE BENTHAM, Esq.

The collections now under consideration were made, as far our limited means would admit, during hasty visits to the jee Islands, one of the groups of the Friendly Islands, na, in the New Hebrides, New Ireland, and New Guinea, Papua. If to these we add the Tonga Archipelago and Moluccas, we have under our notice an extensive region ated south of the equator, and intermediate between the ynesian and the Malay Islands, presenting to us peculiar racteristics in its vegetation and climate.

Advancing from east to west across the Pacific Ocean, the nges in the features of the vegetation on arriving at the ga Islands are very evident. The picturesque scenery of Society and neighbouring islands is exchanged for one of re uniformity, and the bare ridges and mountain-sides, h their accompanying vallies crowded with trees of small wth, are succeeded by a continuous and all-pervading st. A nearer view of the vegetation also displays a corresnding change in its component parts, as many new forms ke their appearance, and there is far more variety. For Polynesian flora, though in many respects highly attive, is poor for its geographic position, and the Society nds most probably do not possess more than five hund species. The Marquesas and Gambier Islands, which ong to the same state of flora, exhibit little peculiarity the Sandwich Islands, though with many peculiar cies, yet have the mass of their vegetation in common, and sess the same features.

At the same time, the portions of country under our conration, and which I have elsewhere* called the Papua or

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* London Journal of Botany, *ined.*

New Guinea Region, are under the influence of a rotation of seasons such as is diametrically opposite to what prevails in parallel regions, and such as does not exist in the neighbouring countries; and which must have its proper influence on the state of the vegetation, which in these warm, as in all other latitudes, observes certain decided and undeviating relations to the seasons of the year, and with the state of the atmosphere they bring with them. By theory, and also by experience, the period corresponding to our summer should be the dry season of the southern hemisphere. For our summer is synchronous with their winter, and the winter is their dry season, the rains occurring when the sun occupies that hemisphere. This tract is swept by two periodical winds, or monsoons; the south-east, which sets in about March or April, and brings with it the wet season, and continuing about six months, is succeeded by the north-west monsoon, which prevails till the ensuing March, and which is that of the dry season. Pursuing the parallel of latitude to the westward, we shall encounter the large island of Celebes. Now here the customary state of things obtains, for the wet season sets in with the north-west monsoon in November. The influence of this peculiarity of the seasons is felt variously in different parts of the region. To the westward, or over but others are less abrupt, presenting some extensive plains, sometimes alluvial, and covered with a rich and luxuriant vegetation. The country was little accessible from our anchorage, and the character of the people at present makes travelling into the interior quite out of the question; so that our means of examining the vegetation were extremely limited. One cursory glance was, however, sufficient to show that the features of the Flora, as contrasted with the Polynesian, were sufficiently distinct; the vegetation is far more varied, *Leguminosæ* are more abundant, *Mangrove* appears in the creeks, and a *Passiflora*, *Chamerops*, and a phyllodinous *Acacia* are seen among the vegetation, with many peculiar and interesting plants. In the interior of some of the islands a Pine, similar to the Cowdie *(Dammara australis)* of New Zealand, is said to exist; and, on the authority of the missionaries, I may mention the presence of the nutmeg, clove, and cinnamon. Of *Myristica*, which presently becomes such an important element of the forest both in species and individuals, this is undoubtedly the eastern limit; and though I heard of only one species, there are most probably others. The animal as well as the vegetable kingdom seems here to receive a new impulse. Birds are numerous in the woods, contrasting strongly with the unbroken stillness of the retired vallies of the Society Islands and other of the groups. The insect world is also copiously represented; and the shores afford a great variety of shells, of which the species of *Conus*, *Cypræa*, *Strombus*, and *Mitra* are particularly numerous. A few animals are indigenous, and the natives decorate themselves with the tusks of a wild hog, which they sometimes repair in parties into the interior to hunt. In the vicinity of the sea are a number of plants, which are generally diffused about the shores of Southern Polynesia, as *Guilandina Bonduc*, *Abrus precatorius*, *Tephrosia piscatoria*, *Lavenia erecta*, *Casuarina equisetifolia*, *Aleurites triloba*, *Barringtonia speciosa*, *Morinda citrifolia*, *Inocarpus edulis*, *Tournefortia argentea*, *Dracontium pertusum*, and *Dracæna terminalis*. The bread-fruit, *uto* of the natives, is in less request than elsewhere; but yams, *ubi*, are raised in large quantities, and are particularly fine. Cocoa-nuts, papaus, taro, lemons, and citrons are among their chief productions; shaddocks make their appearance for the first time, but the Vi (*Spondias dulcis*) of the Society Islands is not abundant.

The few specimens from *Tanna* were collected with a crowd of natives hallooing and capering after us, and sometimes with evidences of not the most friendly intentions. The New Hebrides is a group of much variety of physical character, as well as in the habits and language of its population. Hitherto these islands have been little visited, and at Tanna we saw scarcely any marks of communication with Europeans, and the description of Cook is graphic of its condition to the present day. There is here an active volcano, and at night we saw flames and smoke issuing from several spots on the high lands. The Botanist could be expected to accomplish little with a mass of natives crowded around him, inquisitive about every part of his dress, pulling at his buttons, thrusting their hands into his pockets, and thieving every thing movable. In such a state we spent a few hours at Tanna, and truly we had enough to do; whilst any attempt to resist their behaviour would have drawn down on us the whole swarm of the population, as they were in all respects ripe for a scuffle.

our own experience and appearances on shore, the climate ıst be a very moist one. The luxuriant foliage, rapid decay the trees, numerous fungi, and the multitudes of land ells, all show a continued state of humidity. Forest covers e whole surface, for not a bare spot is to be seen; the trees extremely lofty, rising to a great height, in straight clear ms, but not of large size. Beneath and among the trees e forest is very open, scarcely possessing the least underod or any other vegetation. About the shores, where ely exposed to light, a few trees bore flowers, but there was nerally too much luxuriance in the vegetation to permit of e ready developement of the reproductive organs. Though e climate is so moist, the herbaceous vegetation is propornately small; attributable to the shade universally afforded the trees. Palms are now becoming more numerous in *eca* and *Caryota*; *Cycas?* is frequent for the first time, d also several species of *Pandanus*, individuals of which e very numerous in the more rocky situations. There are least two species of *Myristica* in the forest, one having a all oblong fruit, with a deep red mace, and only of slight gance or aroma; the other larger and rounder, with the ace of a pale colour. Carteret mentions a small dainty it, but without giving it a name; it is evidently a *Spondias* th an acid taste and bony structure, and every way inferior the *Vi* of the Society islands. Ferns are numerous, and th a character and habit recalling the Brazils, but few were fructification. Species of *Ficus* enter largely into the comsition of the forest, and twining plants also abound. *Orideæ* also begin to appear in characteristic numbers.

New Guinea, or, more properly *Papua*, possesses the variety climate of which we have been speaking, in its intensity. hroughout our visit the weather was far from agreeable, beg very fluctuating in its character, with heavy rains at interls. The temperature was always high, and from its humity the atmosphere felt very close and oppressive. Every ening there occurred more or less thunder and lightning. ain was frequent with squalls of wind; but prevailed more by night than day, sometimes falling for hours heavily. From its vicinity to the equator, this is most probably the constant character of the climate. New Guinea does not seem to possess any interior mountain ranges of such an elevation as to approach perpetual snow, as is stated in some geographic works; though it abounds in bold scenery, often extremely picturesque, and covered with a lively verdure. But this varies, and in some places there are extensive plains without a hillock, particularly at its most northern part. Volcanic action has been noticed, and several volcanoes are mentioned as still active; but as they were not seen by us, they were probably to the south of our observations. In one situation stratified sandstone and conglomerate rocks prevailed, and the islands known as Moa, are perhaps coral. In the Great Bay and to the westward, limestone abounds.

I am careful not to speak in superlatives; but in the case of New Guinea I must indulge, as I believe it to offer the richest and most varied specimens of tropical vegetation I have any where seen. With very scanty means of collecting I obtained a pretty fragment of the flora, and every spot on which I landed displayed species not hitherto seen. I therefore concluded that many had a very limited range of growth. The forest is universal, except where the natives have some cultivastantly meeting with its fruit in the forest, nearly the size of the nutmeg of commerce, but somewhat longer. Both it and the surrounding mace were entirely without aroma. Several persons on finding these, thinking they had a prize, hastened to eat them, but some soon after repented. Those who went so far as to eat two, were soon after surprised by a violent purging of the bowels, with disturbance of the stomach. A single one produced nausea, sensation of fullness, and flatus.

Among the fruits brought to us by the natives were several distinct, and to us novel varieties of the plantain. 1. A large roundish (cylindrical) deep brick-red kind, with fissures on the surface, something like the fehi of Tahiti in appearance. 2. A kind approaching the banana in taste and shape. 3. Some which were small and green when brought to us, almost cylindrical, the angles scarcely apparent, fruit pendant from the branch, and stem erect. 4. In size and appearance very like the last, but with the usual mode of growth and habit of the plantain.

I have mentioned that the flowers displayed little brilliancy in their colours, and that white prevailed. In my observations on the relative proportion of these, I find that the cyanic series in the full number fifty is represented by 12, the xanthic by 23, and the blanched or white (a series not adopted in theory, but necessary in practice) by 15. In central America in 10° N.L., and, therefore, in a similar parallel, I found these series to be respectively 12, 30, and 8. And, again, in a high northern latitude, 57°, they were 26, 13, and 11. So that the latter situation, even in July vegetation, has a smaller proportion of the last series than has New Guinea.

The *Moluccas*, or as the Dutch call them, Molukkos, are better known, and the vegetation of the more frequented islands has been carefully investigated by Rumphius. Almost my only botanical act here, was to visit the monument to the memory of this celebrated naturalist, in a garden at Amboina; and which is kept in neat and clean repair. We cannot do otherwise than speak well of a climate which permits the nut-

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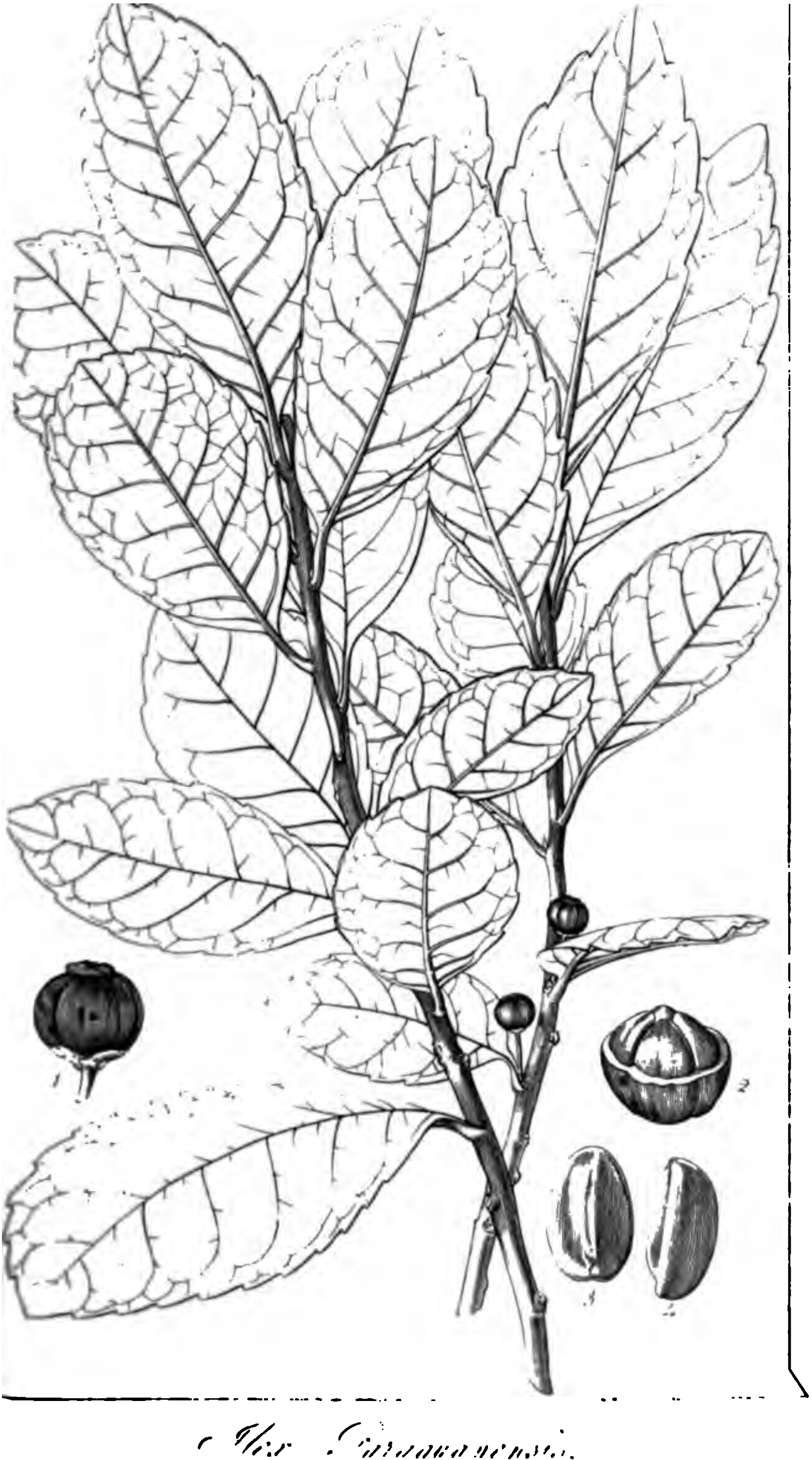

Ilex Paraguayensis.

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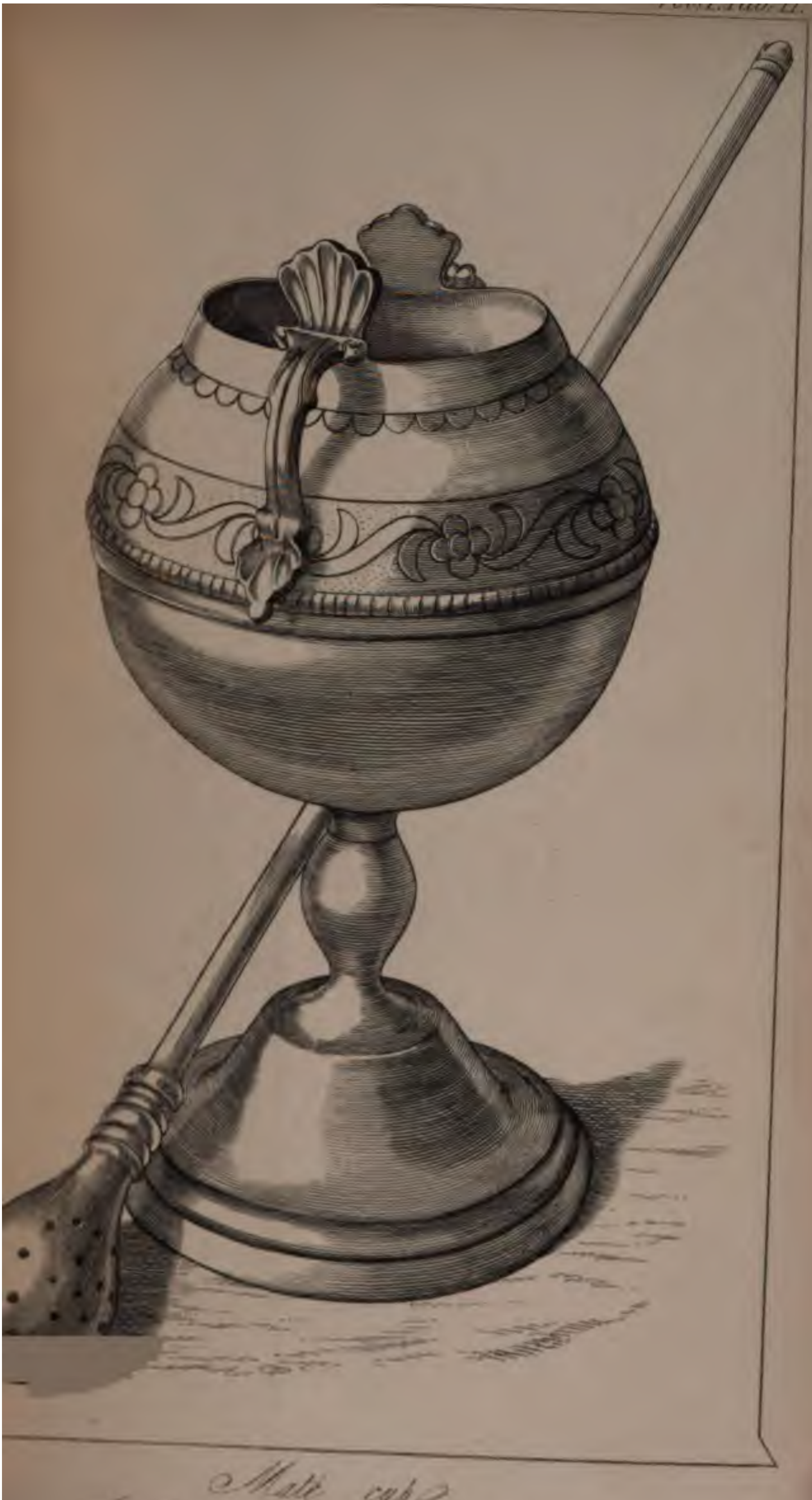
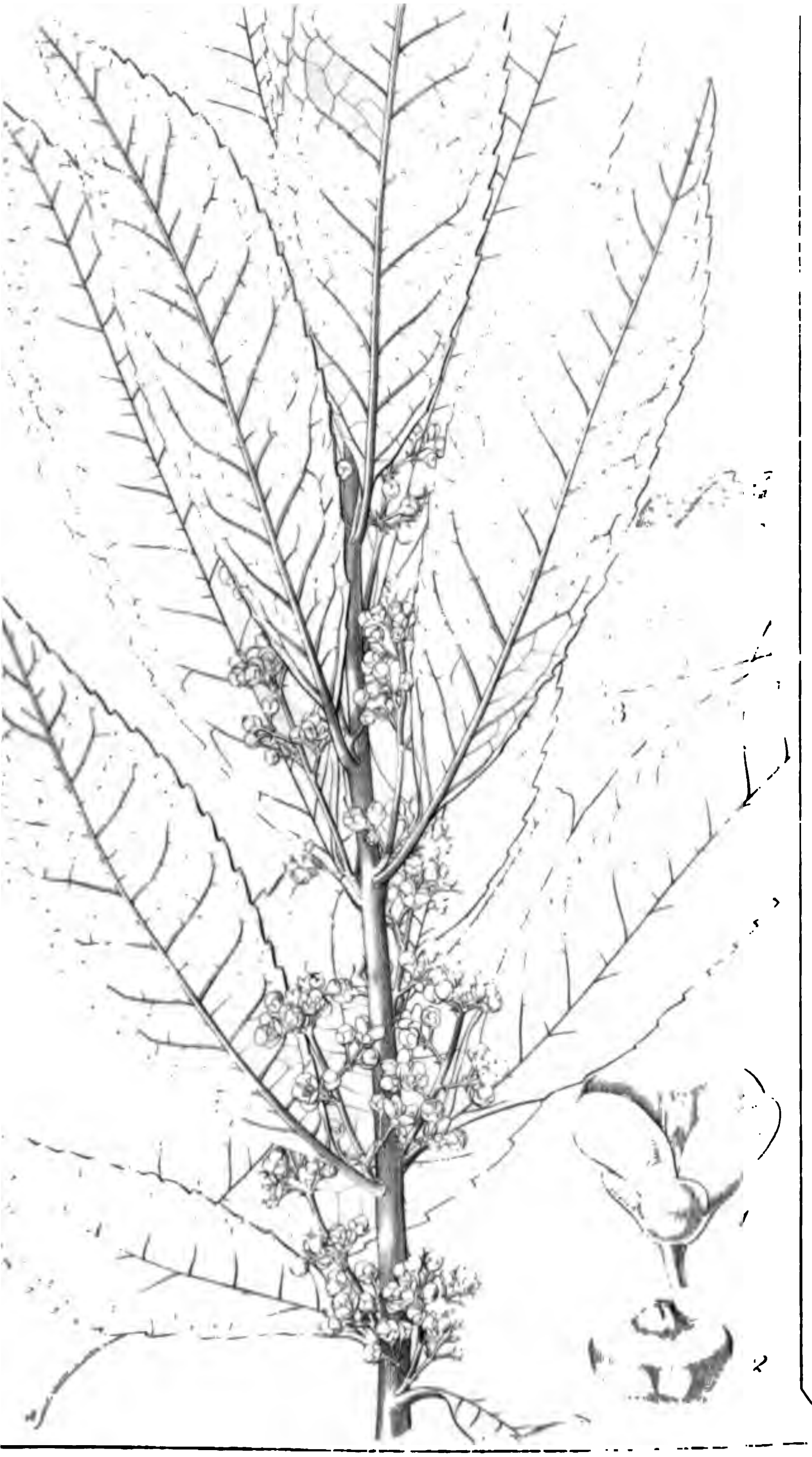
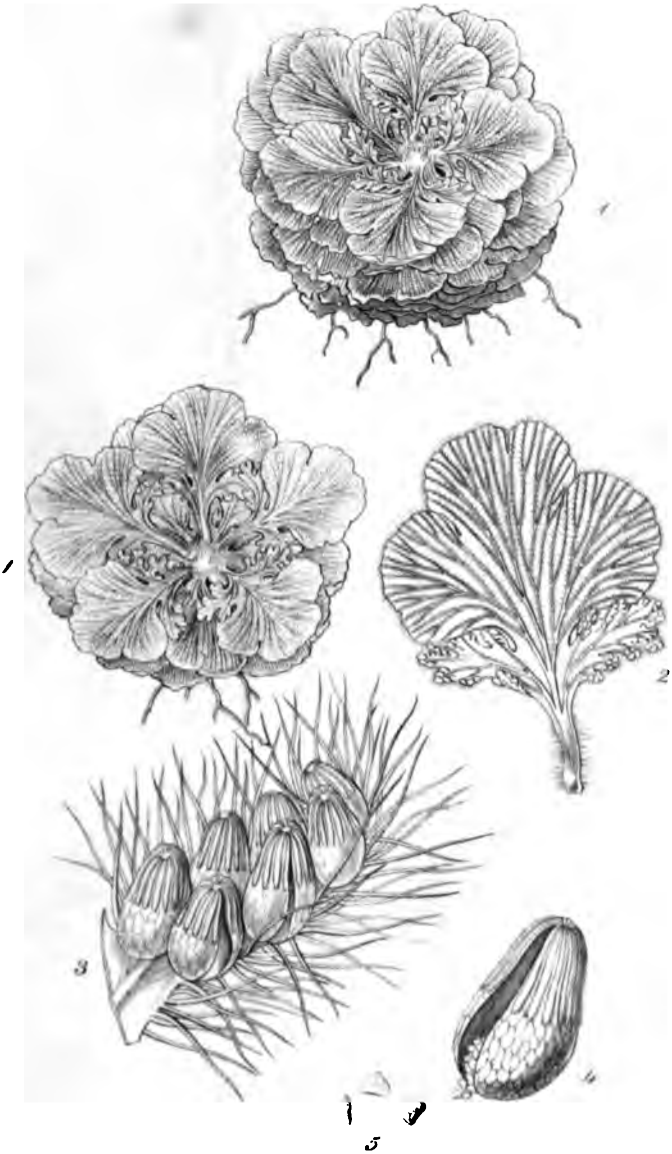


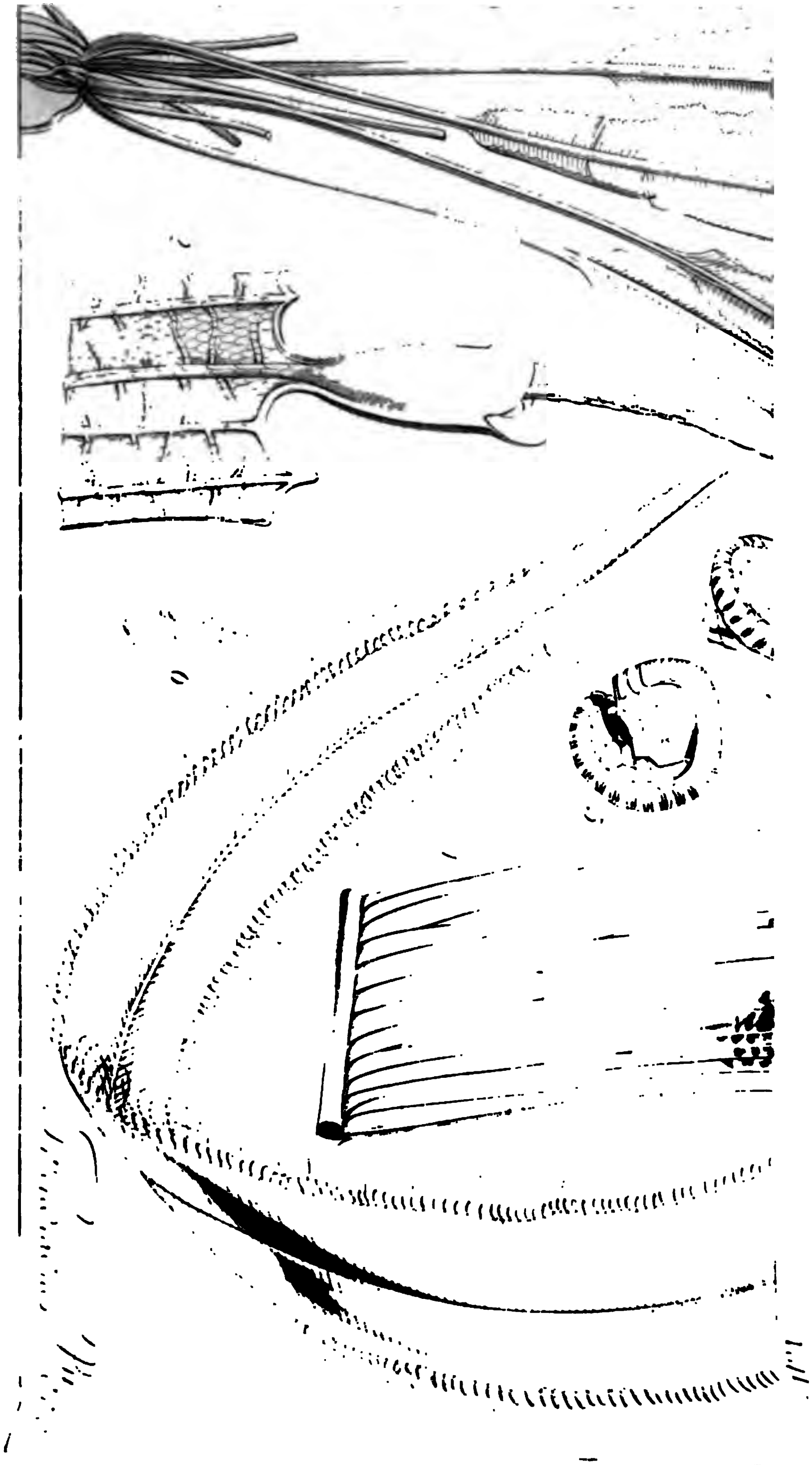
Maté cup
In the possession of Lady Callcott.



Ilex Paraguayensis



Trachyloris elegans



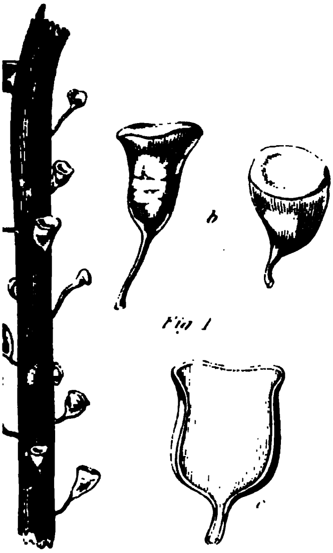


Fig 1

Hypolyssus Montagnei.

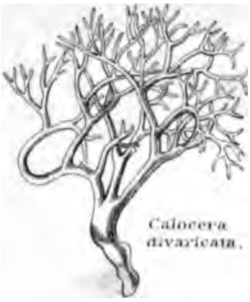


Fig 2.

Calocera divaricata.

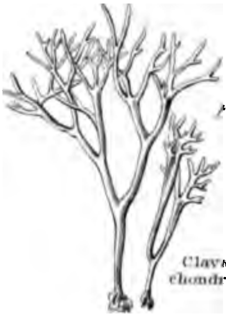


Fig 3

Clavaria chondroides.

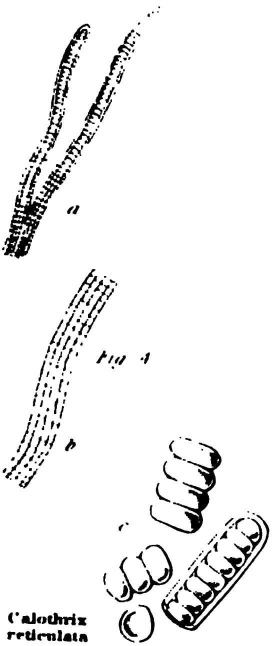


Fig 4

Calothrix reticulata

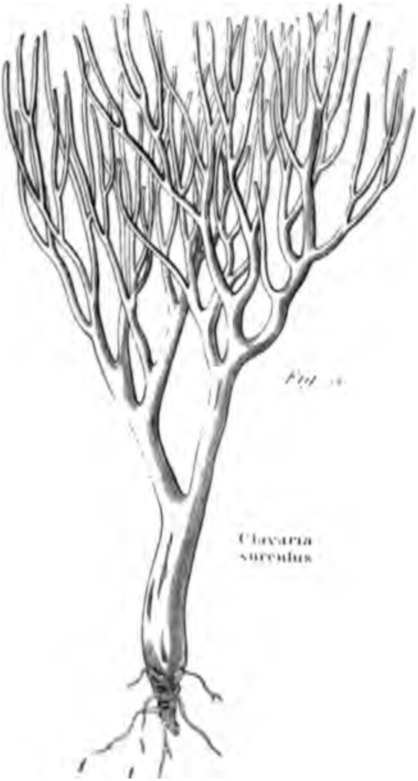


Fig 5.

Clavaria surculus

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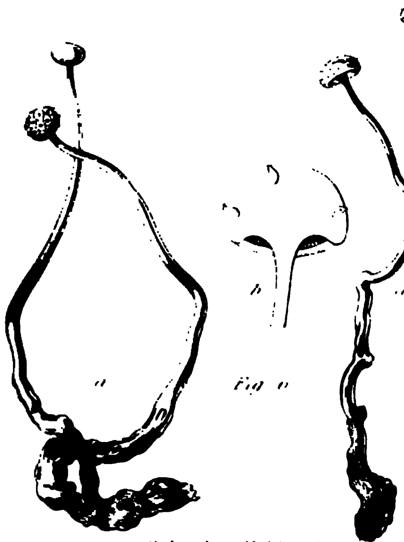
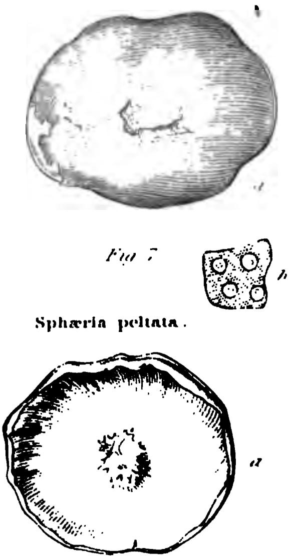
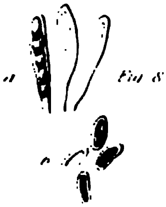


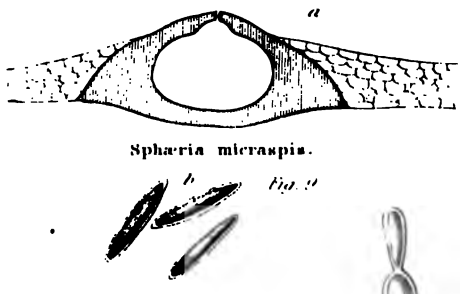
Sphæria pileiformis.



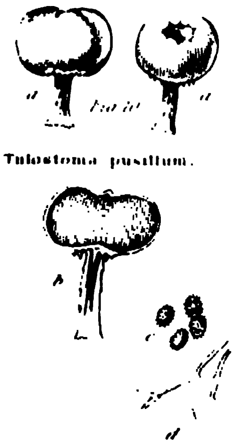
Sphæria peltata.



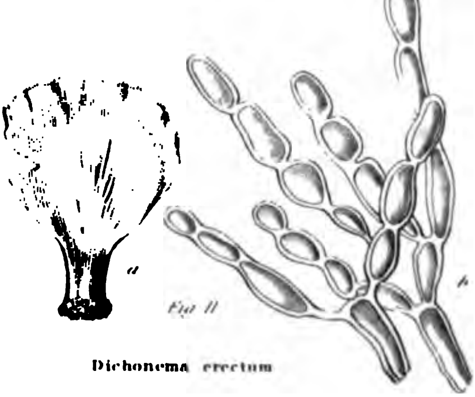
Sphæria examinans.



Sphæria micraspis.

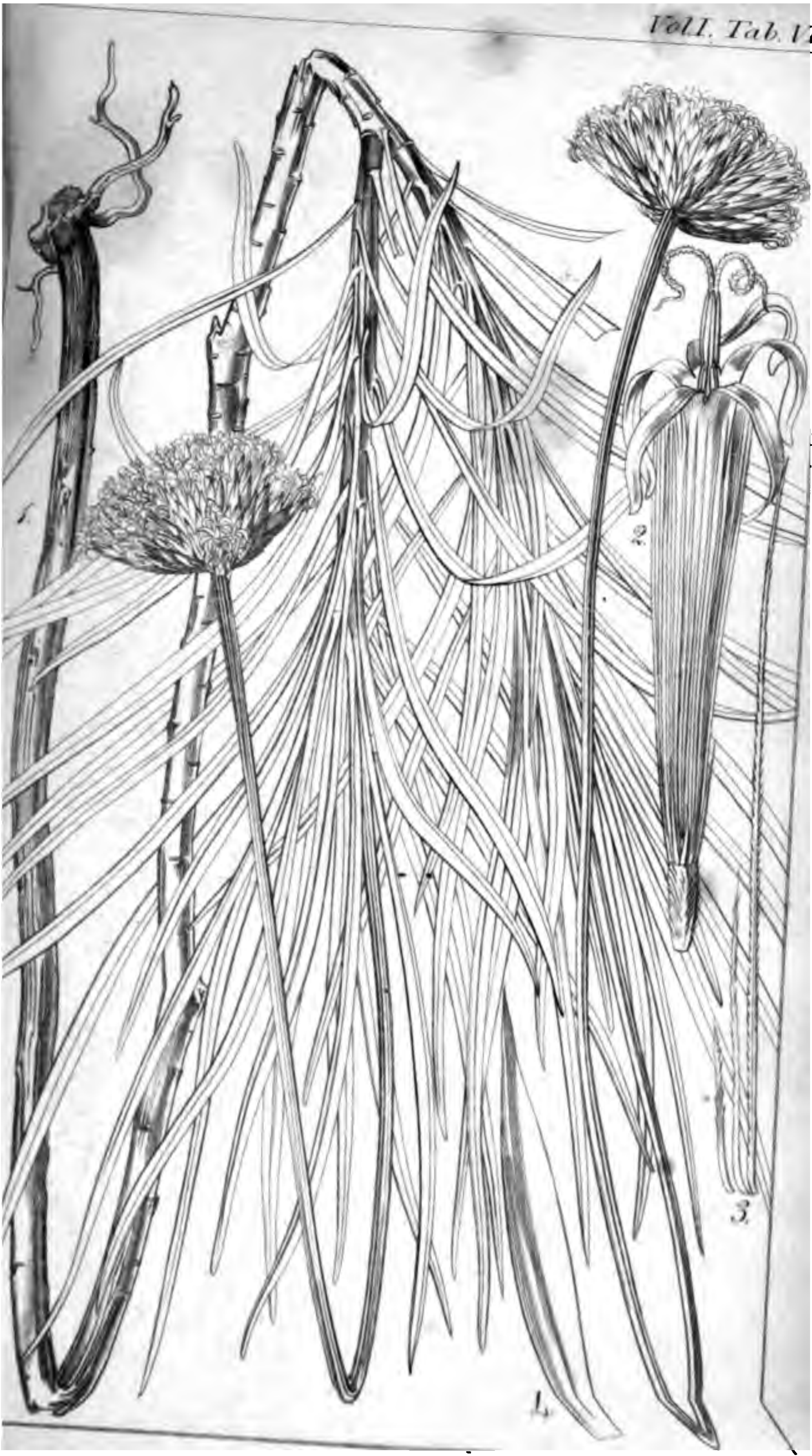


Tulostoma pusillum.



Dichonema erectum.

Lond. Pub. by H. Baillière, April 1843.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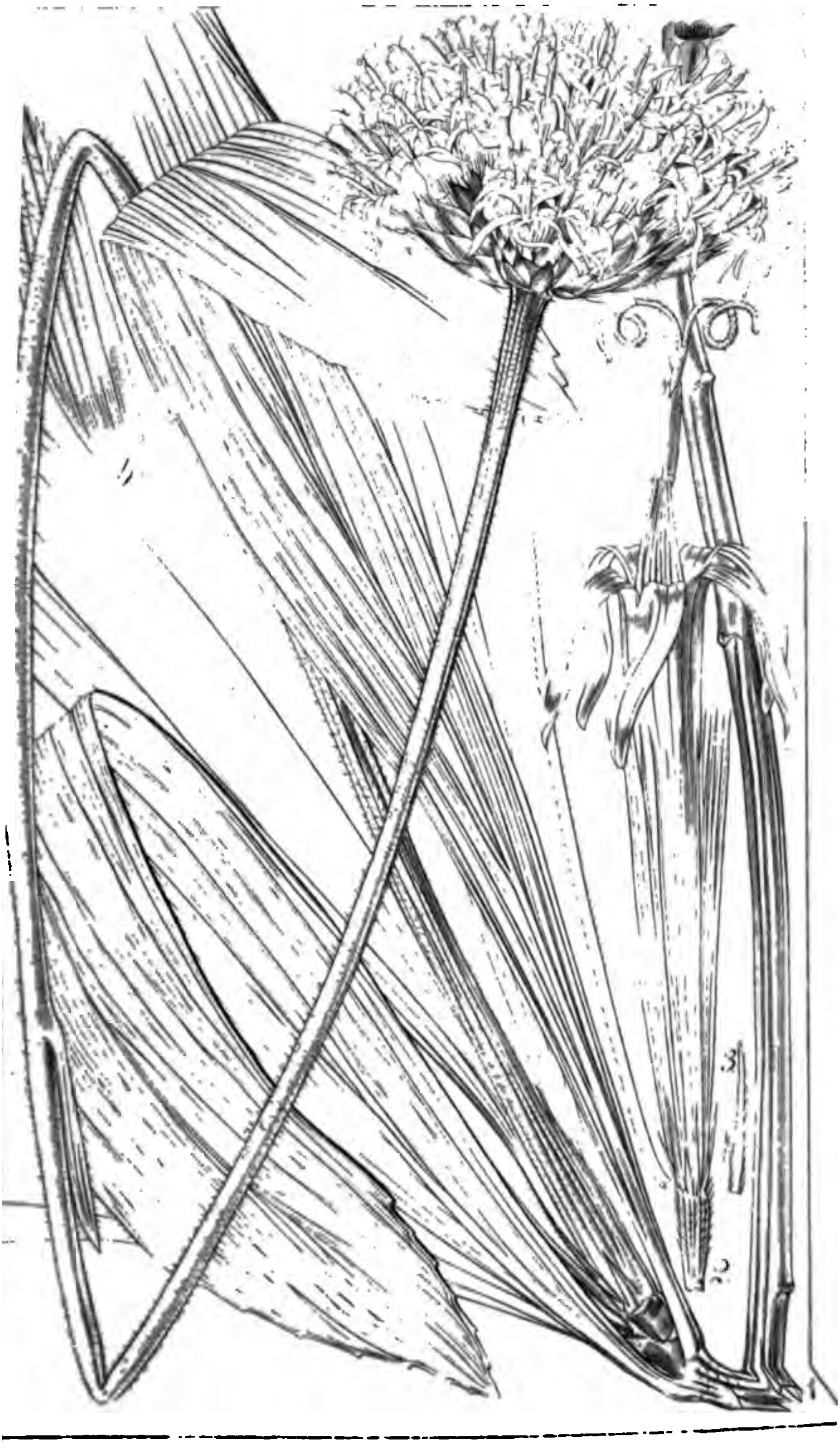
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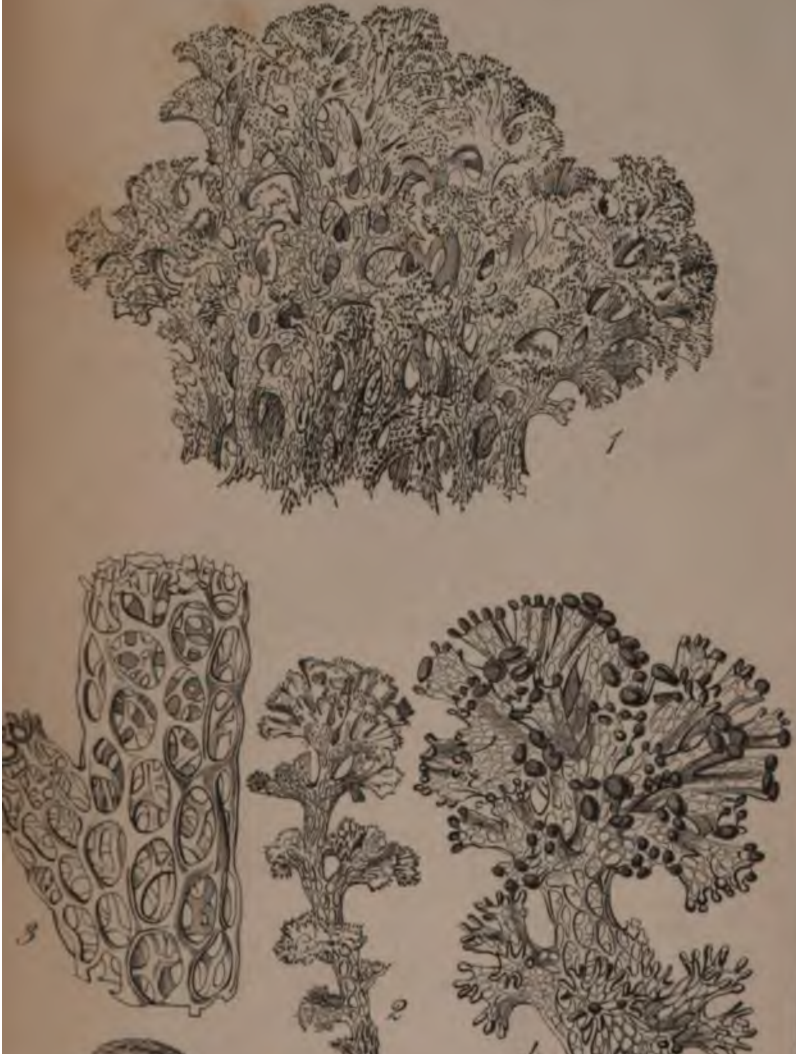
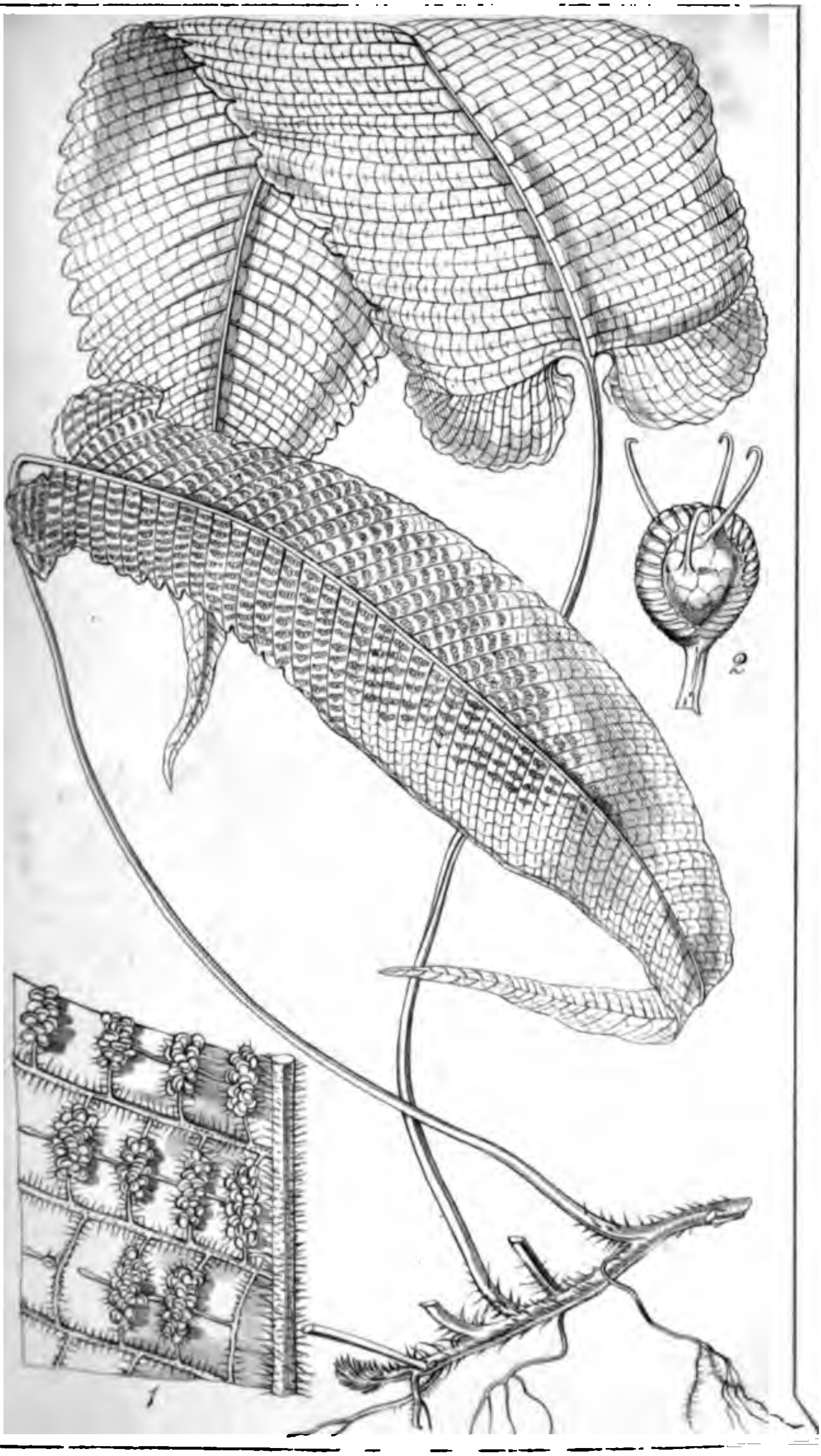
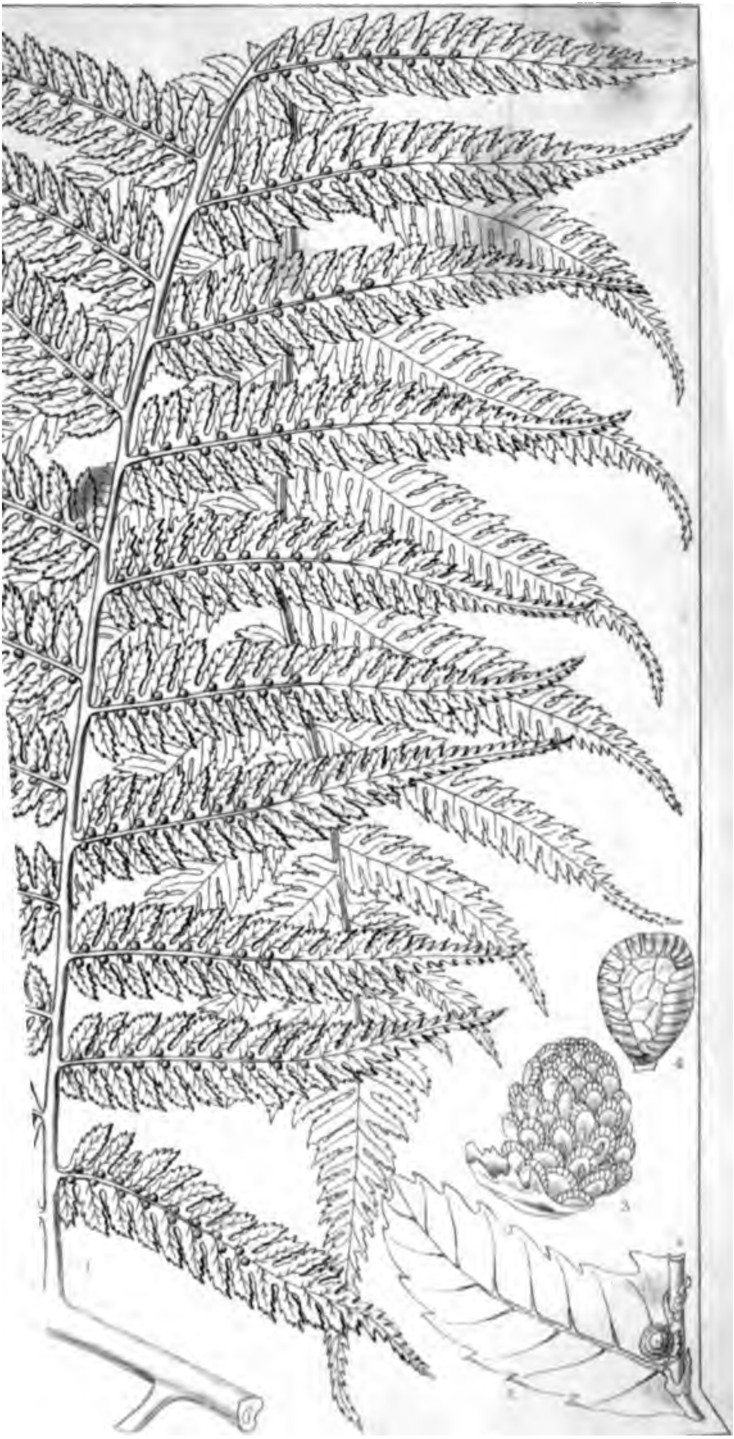


Cenomyce retipora



Meniscium simplex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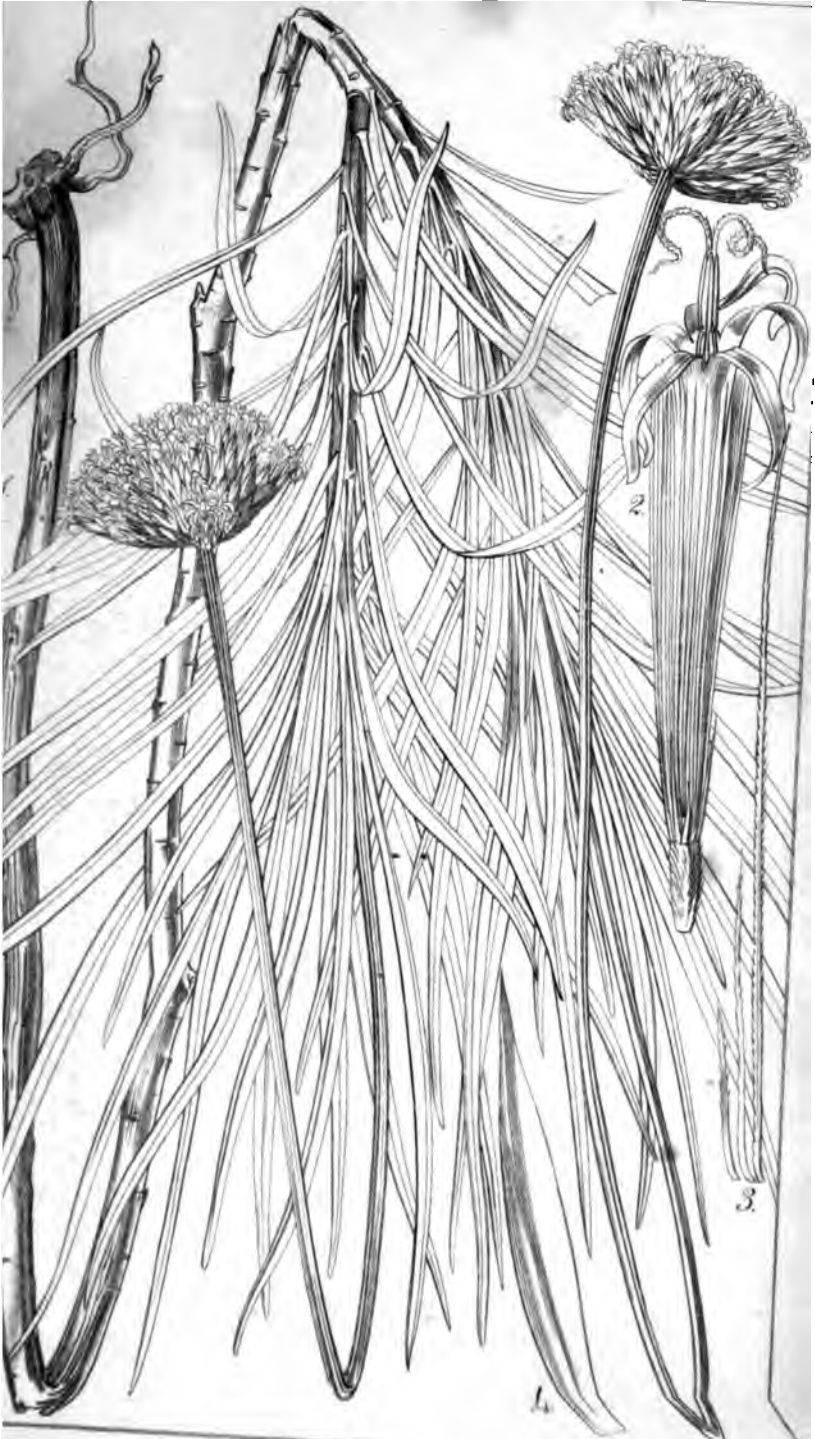

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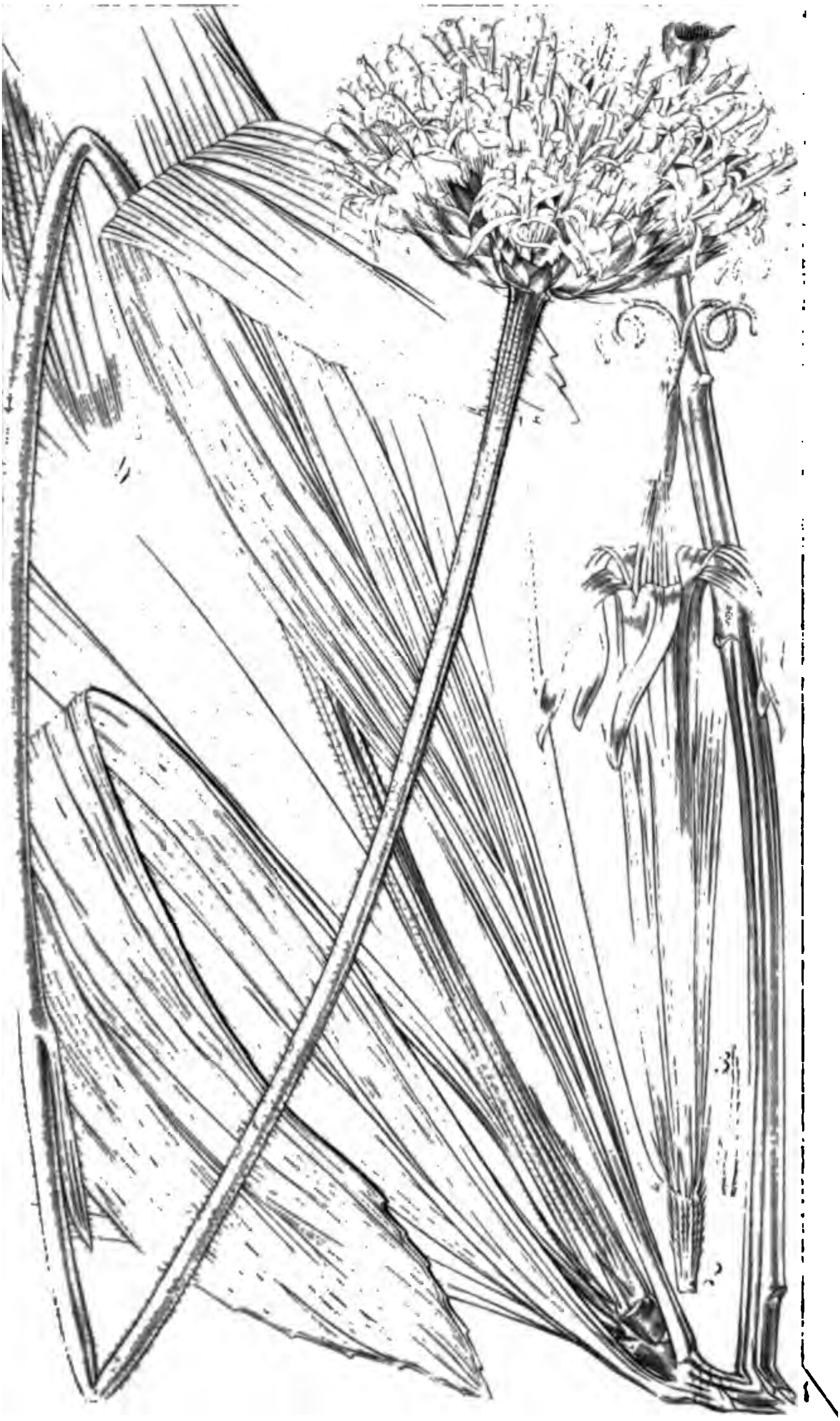

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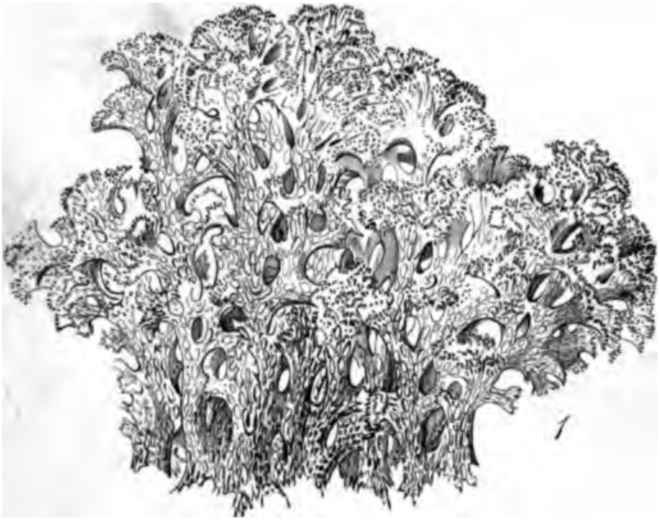
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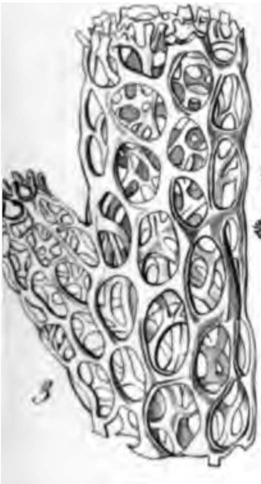
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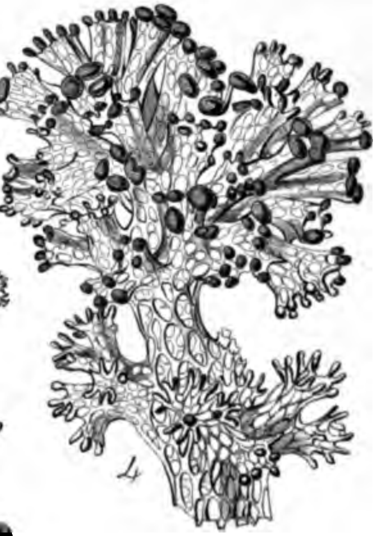
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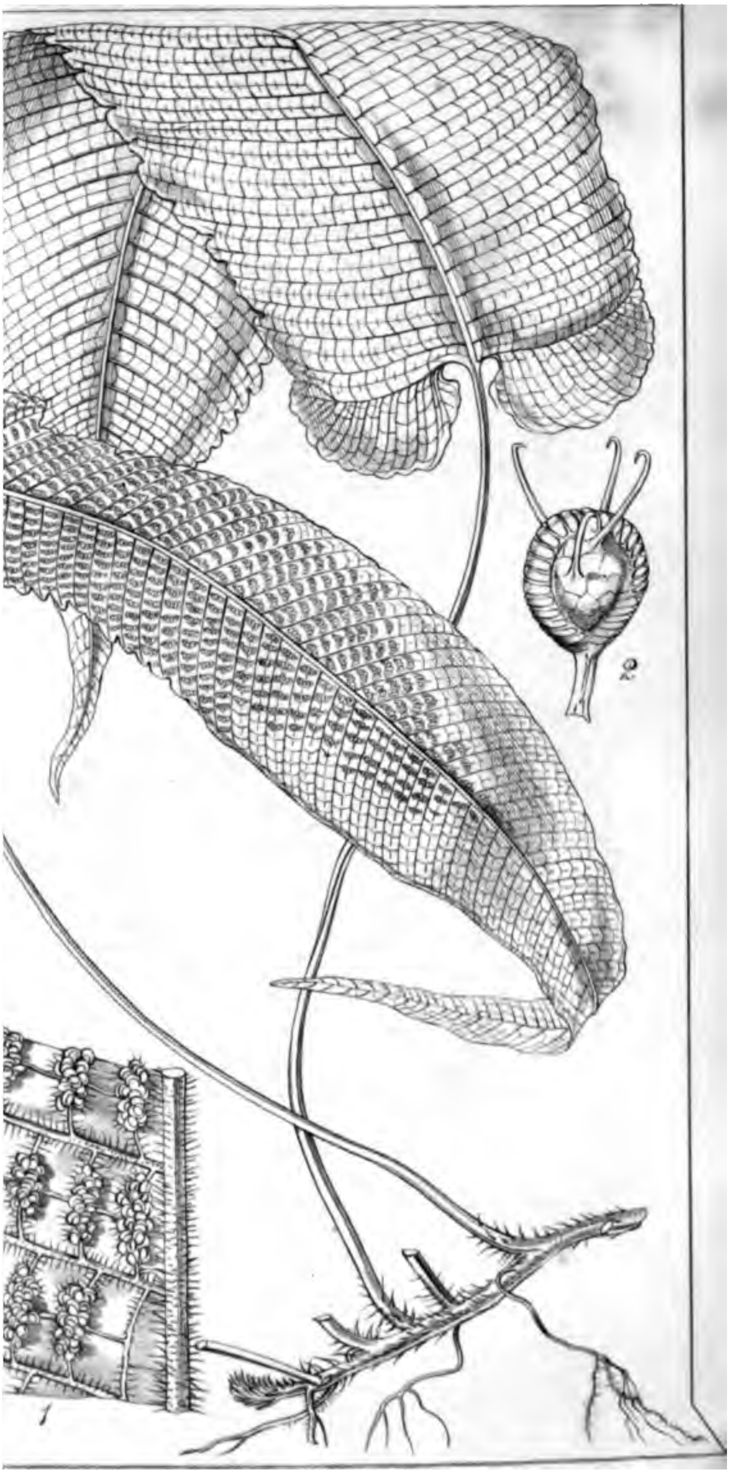
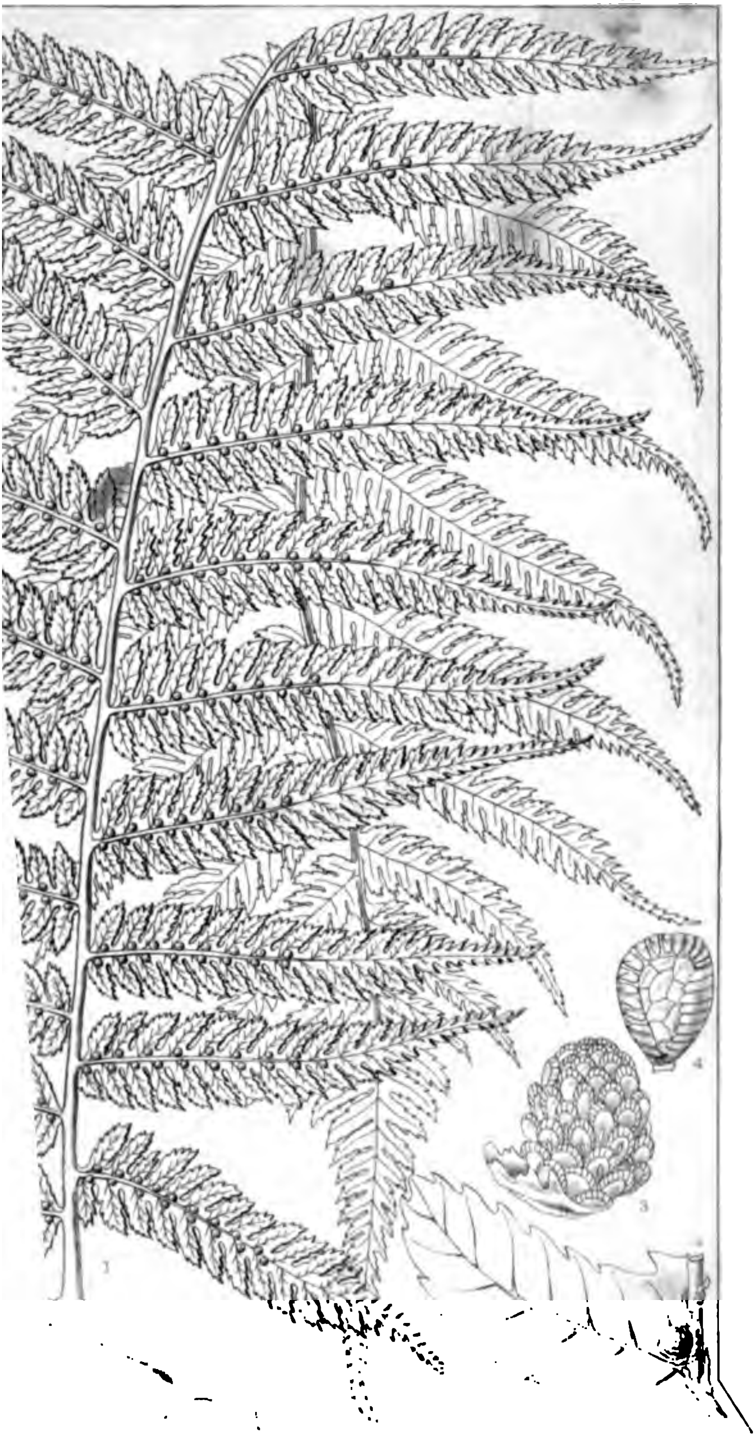
Cenomyce retipora.



Microsorium irioides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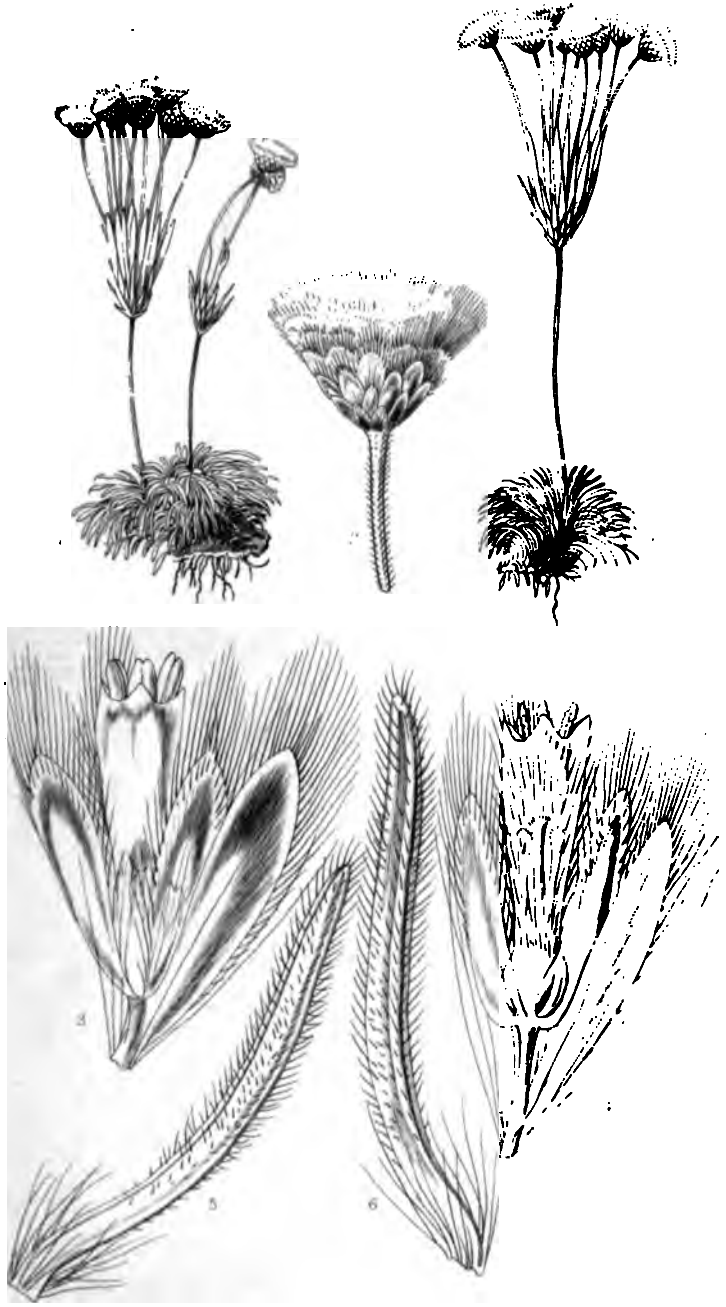
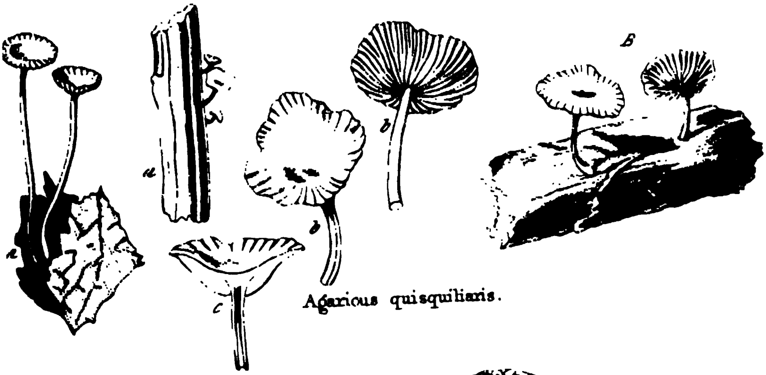
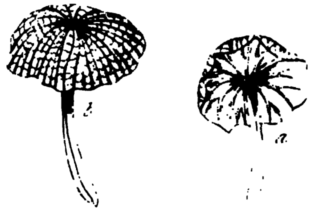


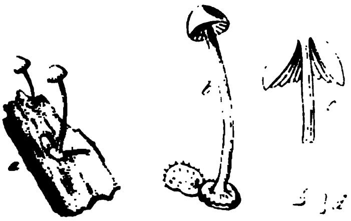
Eriocaulon arenarium



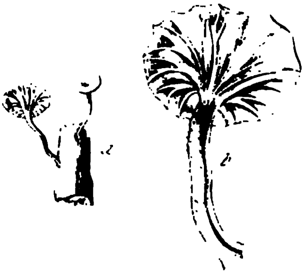
Agaricus quisquiliaris.



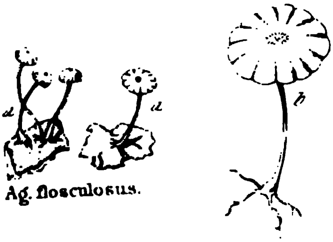
Ag. xerophyllon.



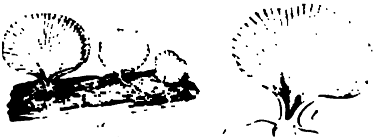
Ag. echinulatus.



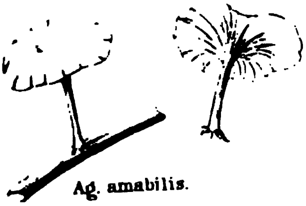
Ag. inconspicuus.



Ag. flosculosus.

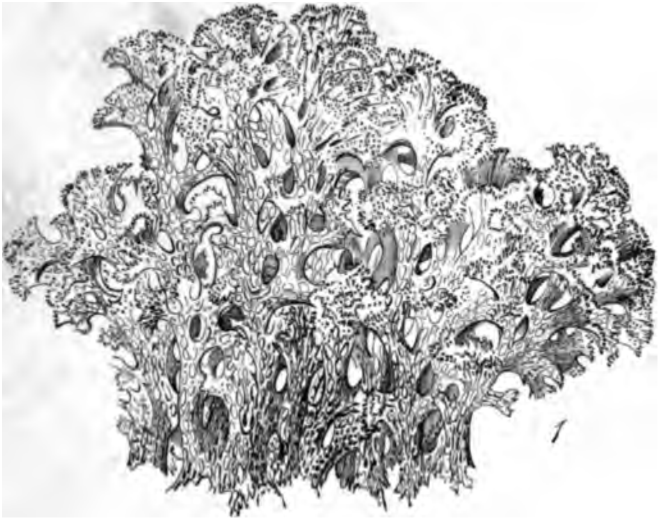


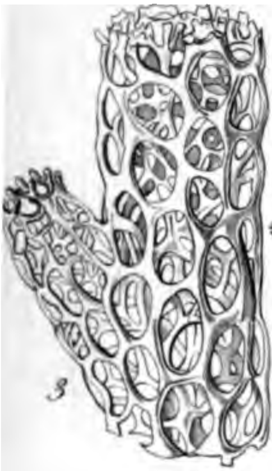
Ag. spiculiferus.

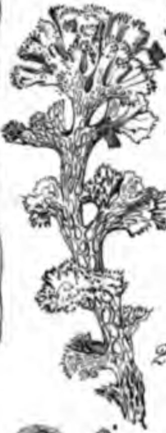


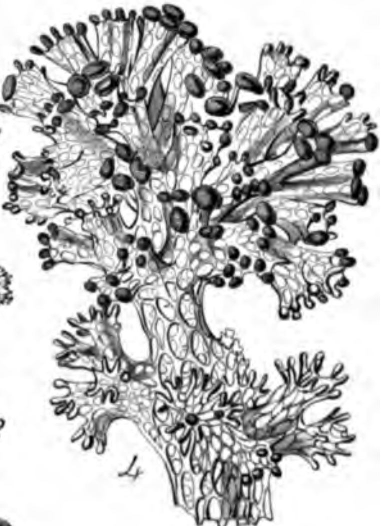
Ag. amabilis.

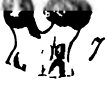
Mrs M J Berkeley del.



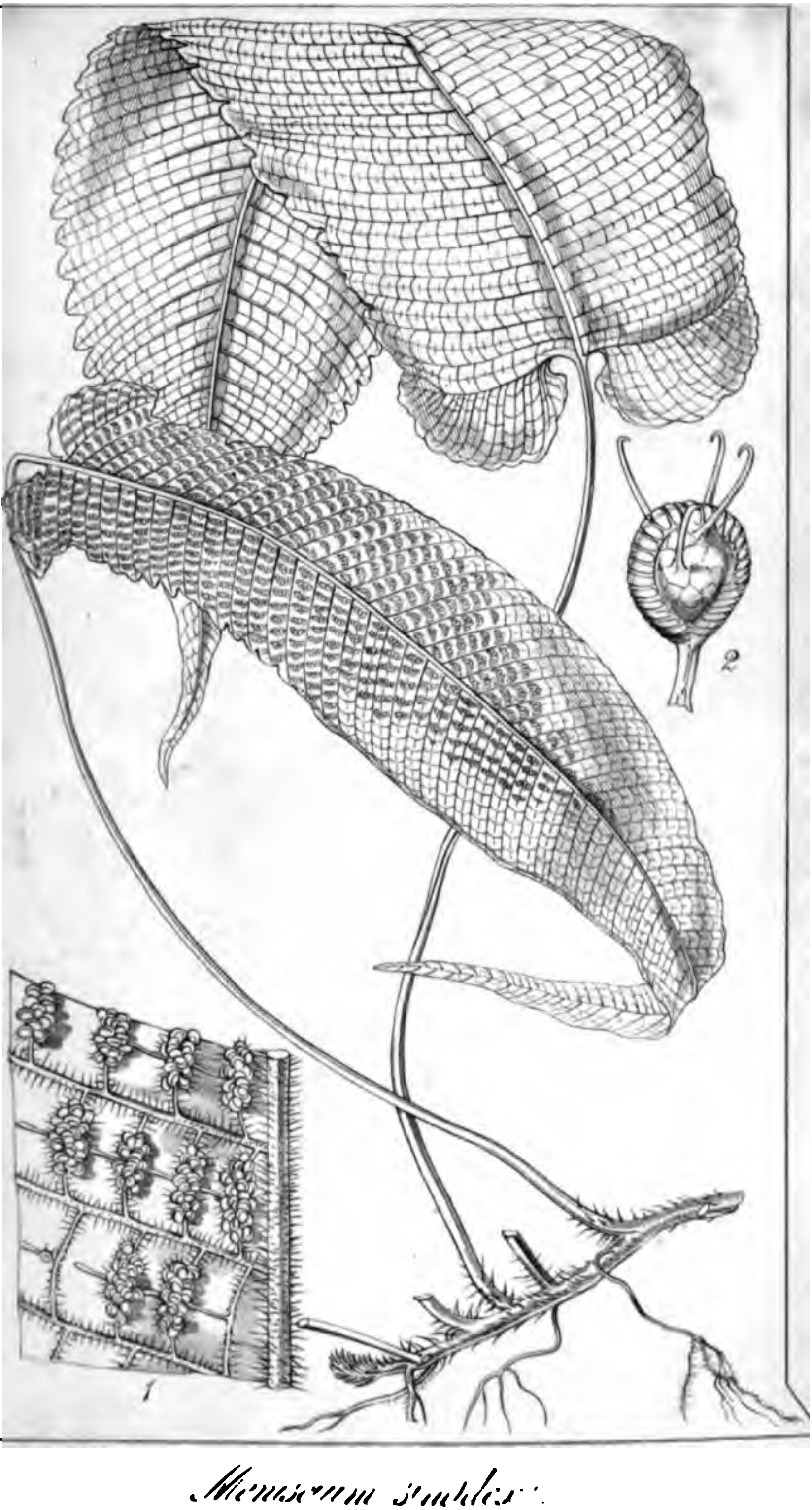




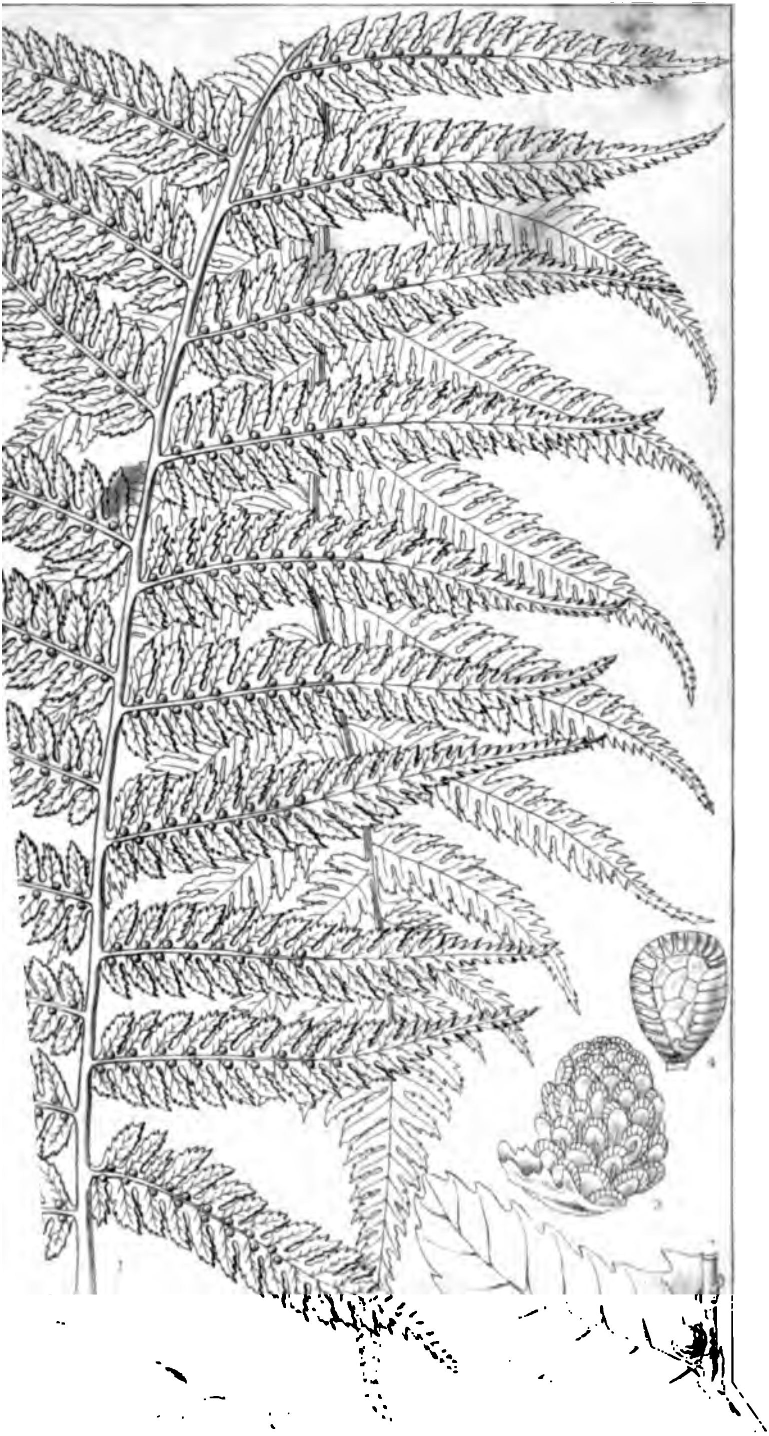




Cenomyce retipora.



Meniscium simplex.



Alsophila infesta

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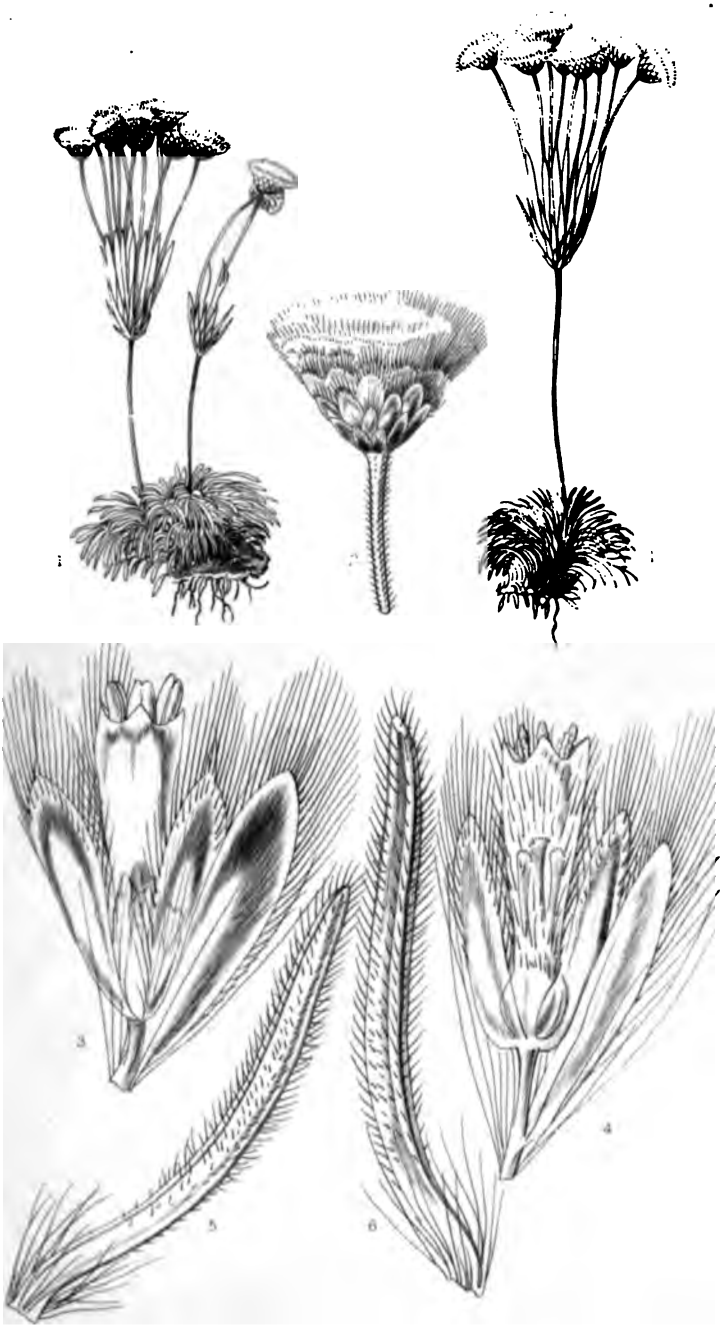
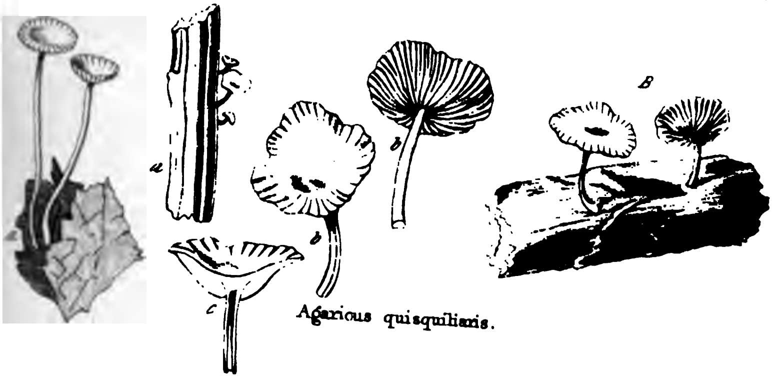
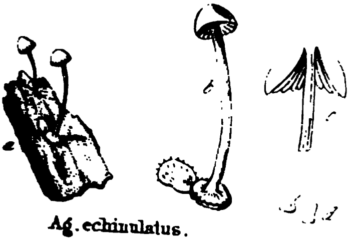


Eriocaulon arenarium.



Agaricus quisquiliaris.



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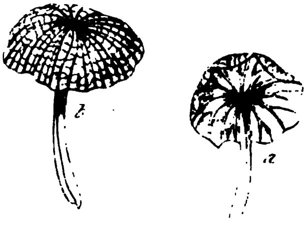
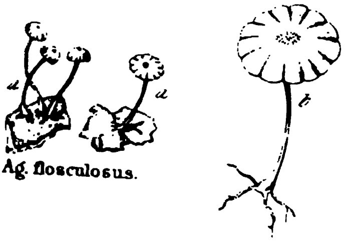


Ag. xerophyllon.



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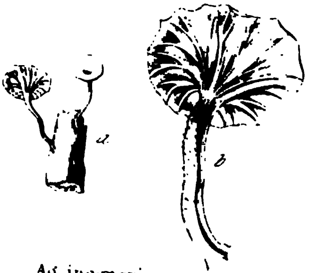

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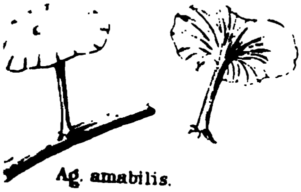

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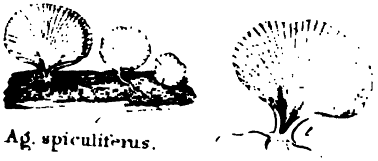

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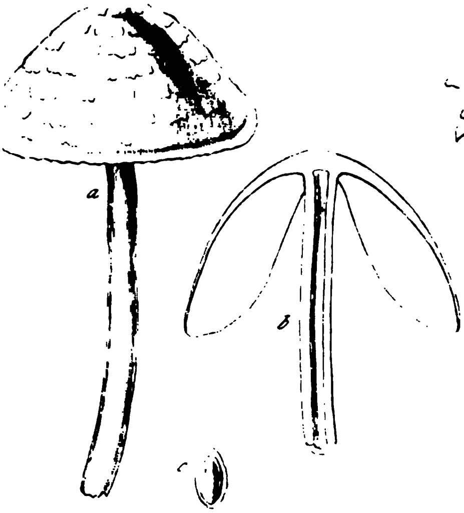
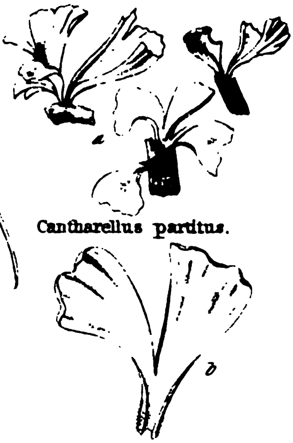
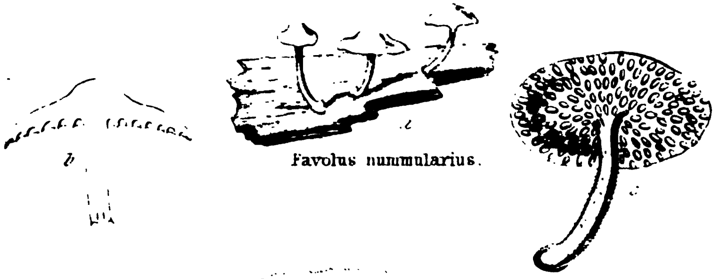


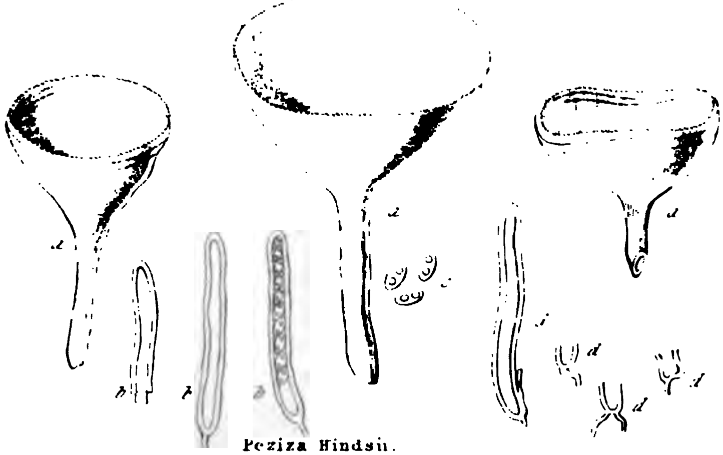
Agaricus sepulchralis.



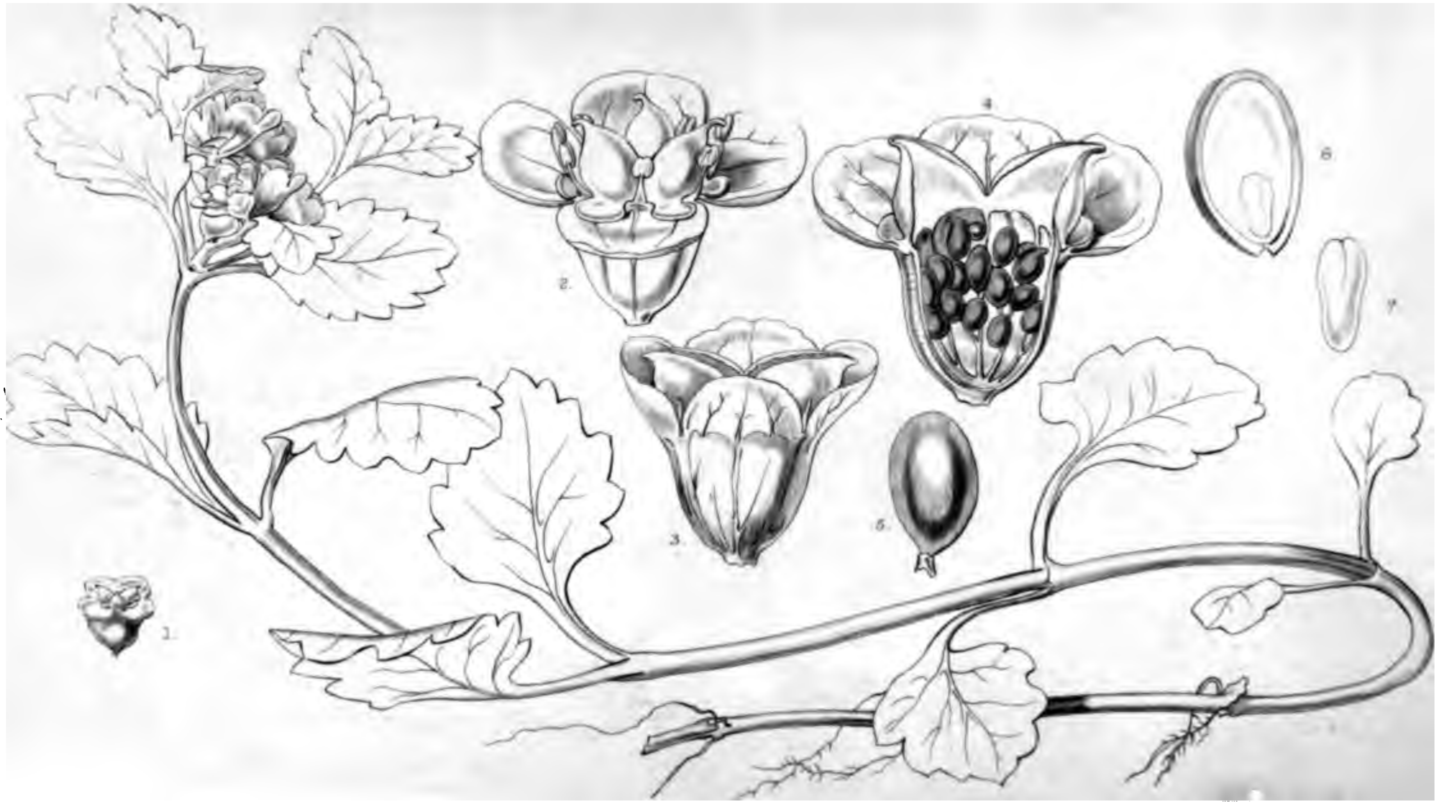
Cantharellus partitus.



Favolus nummularius.



Peziza Hindsii.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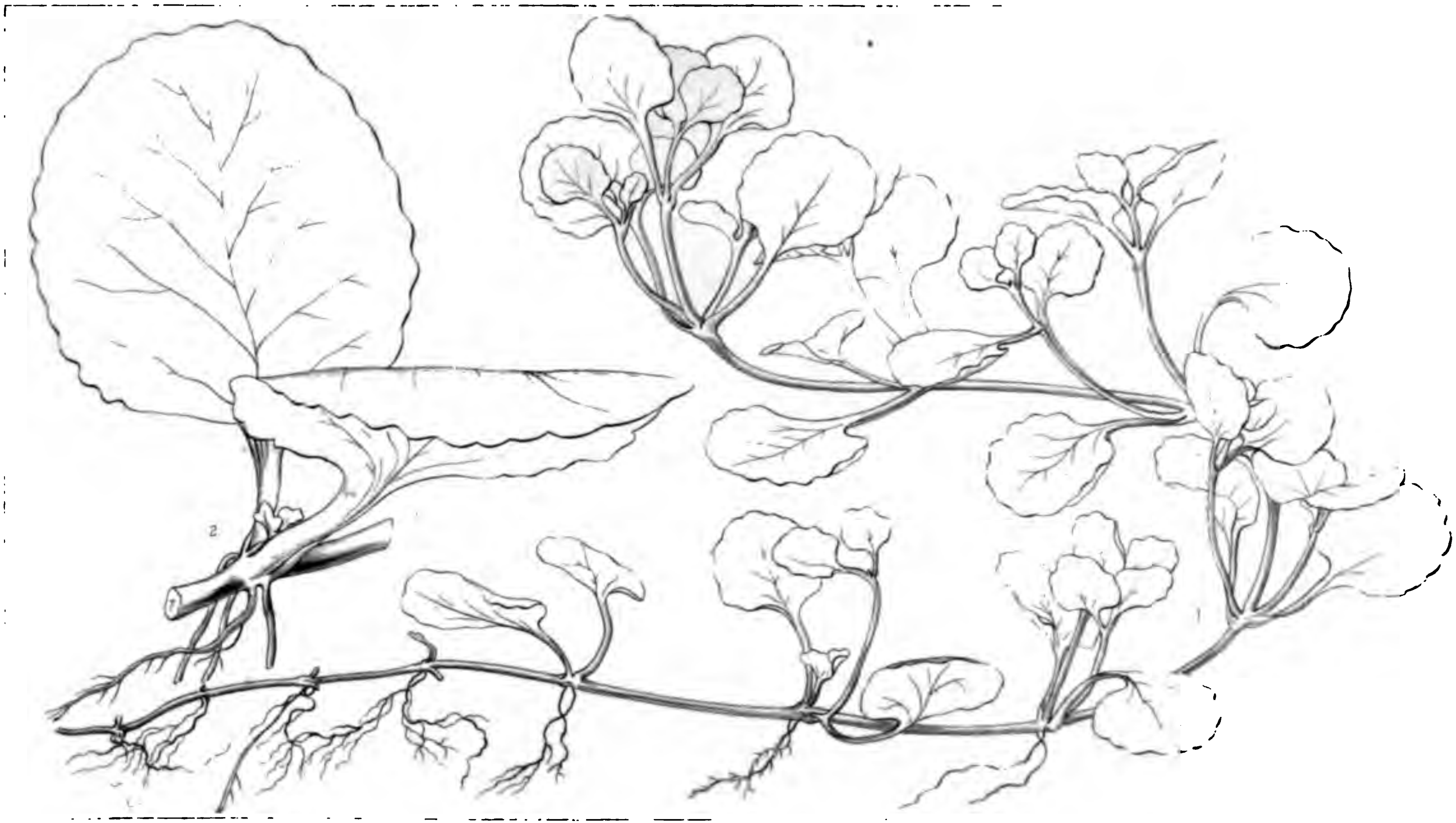
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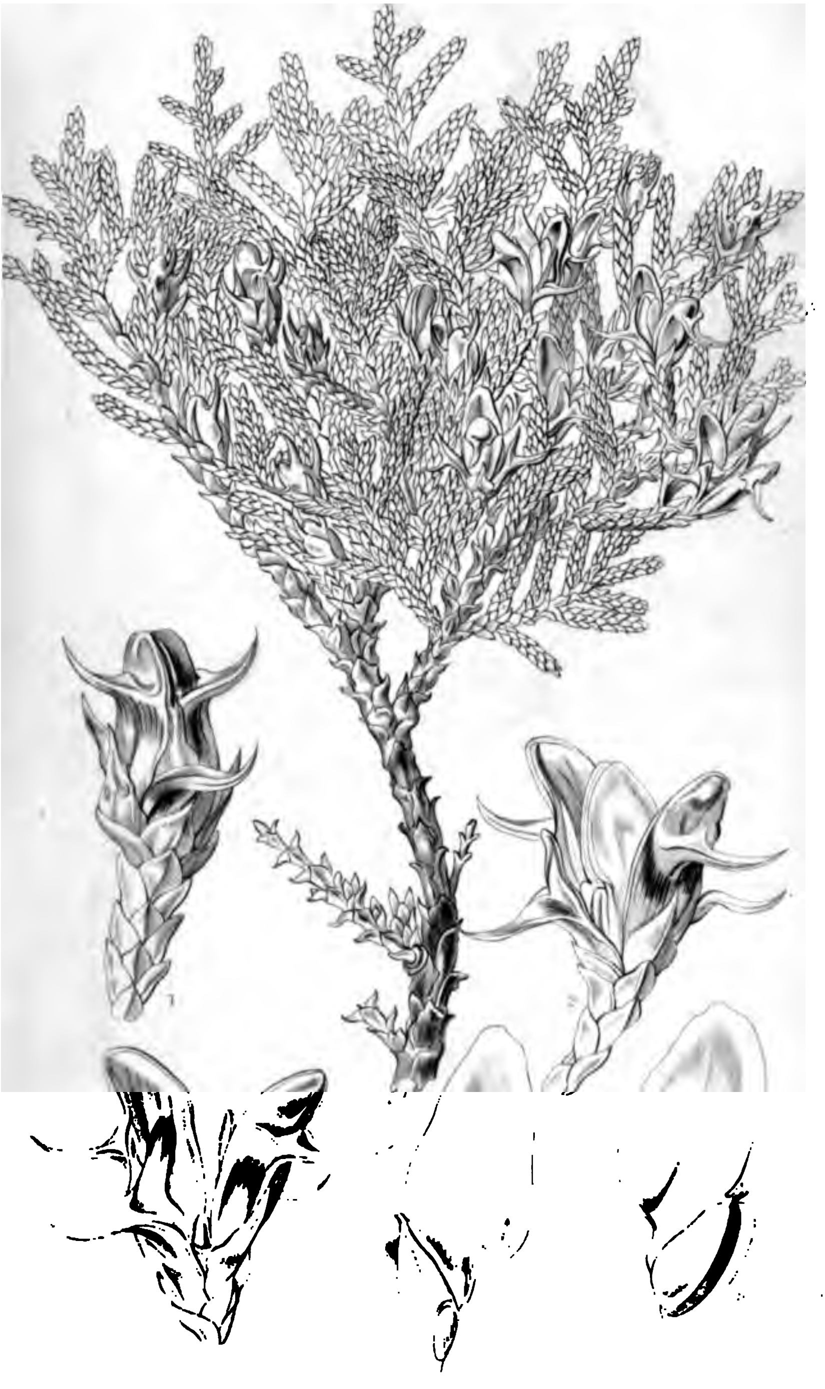
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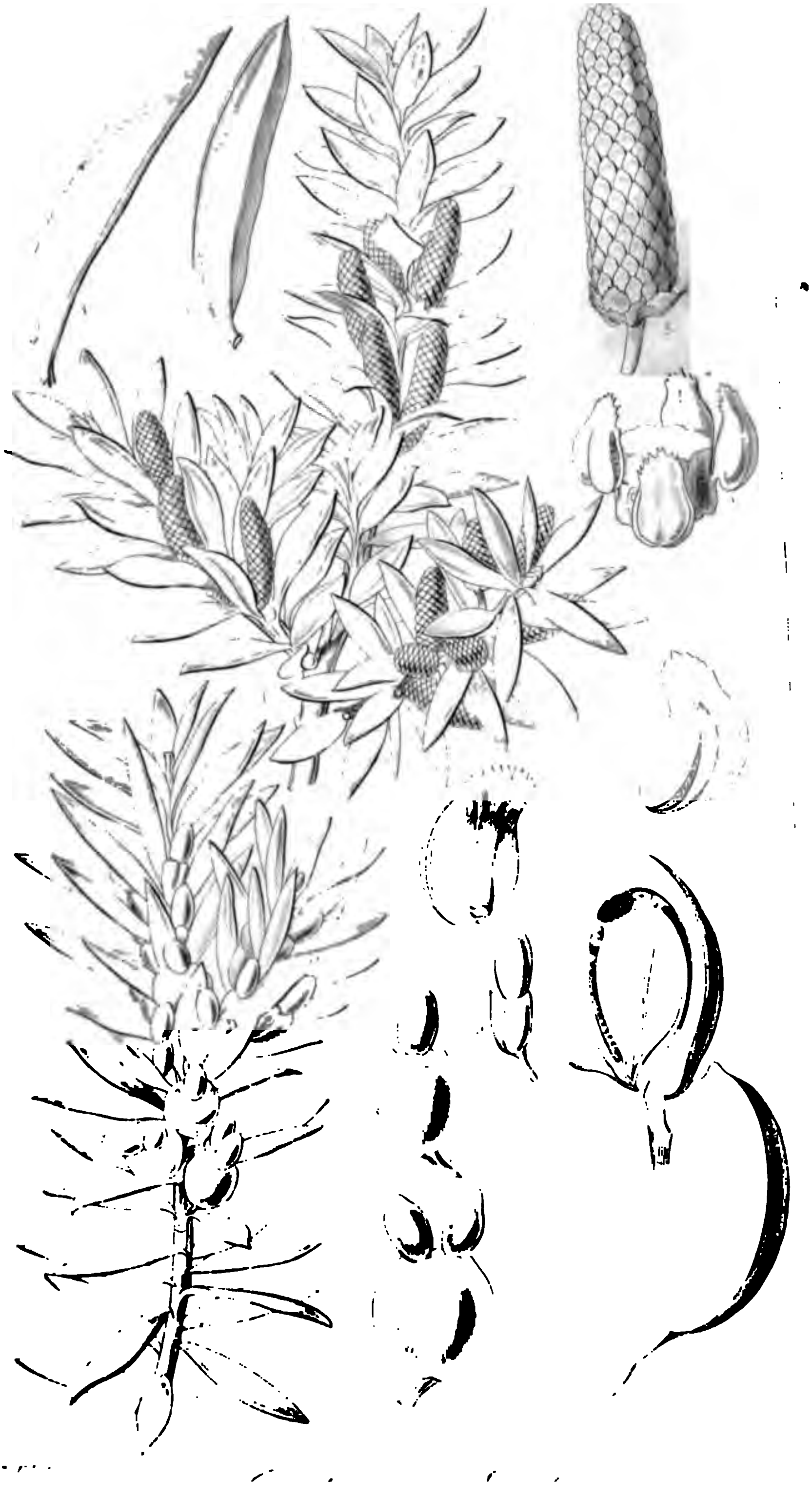
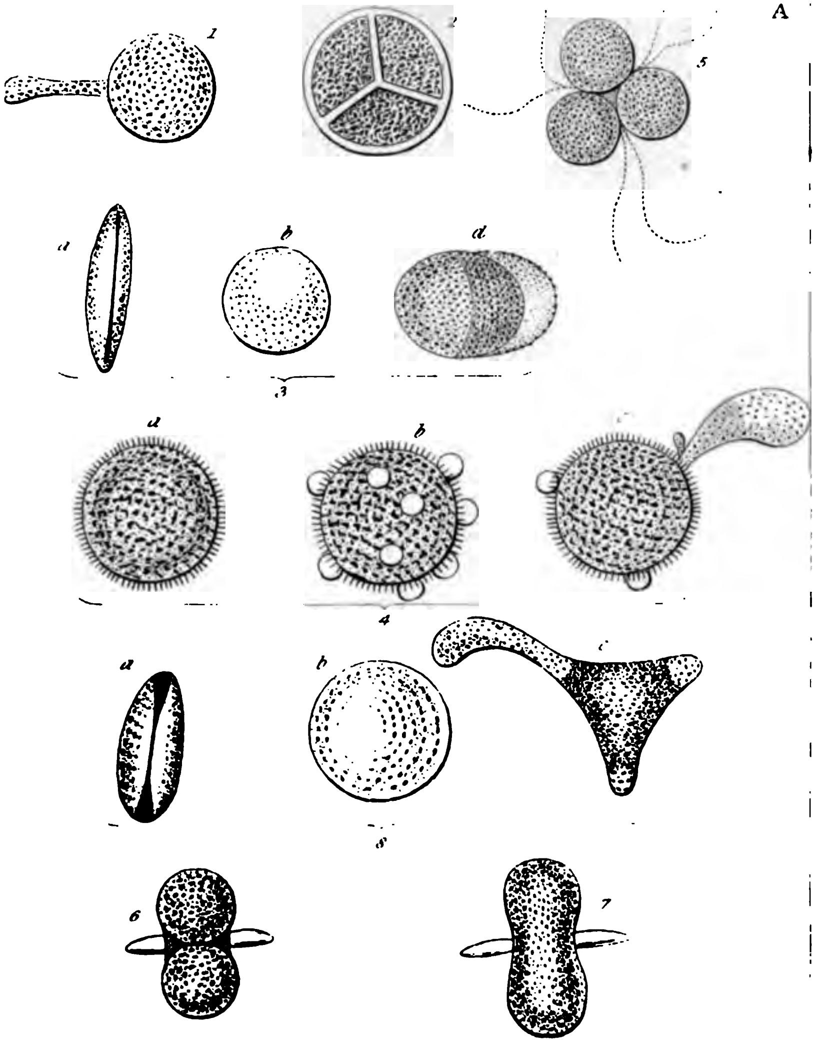
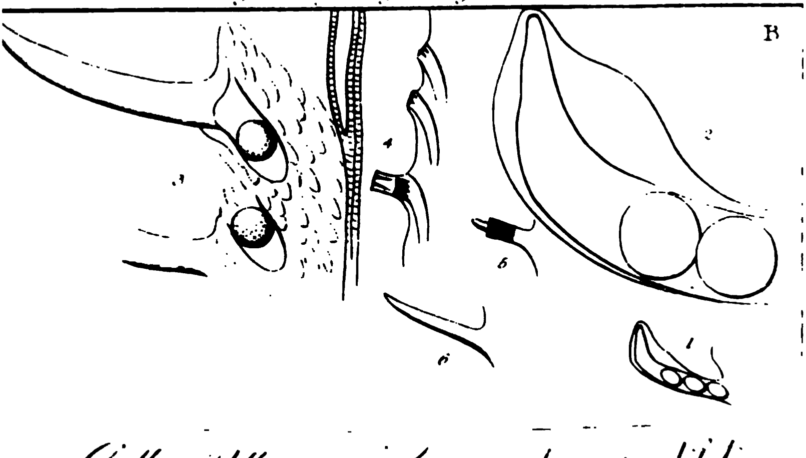
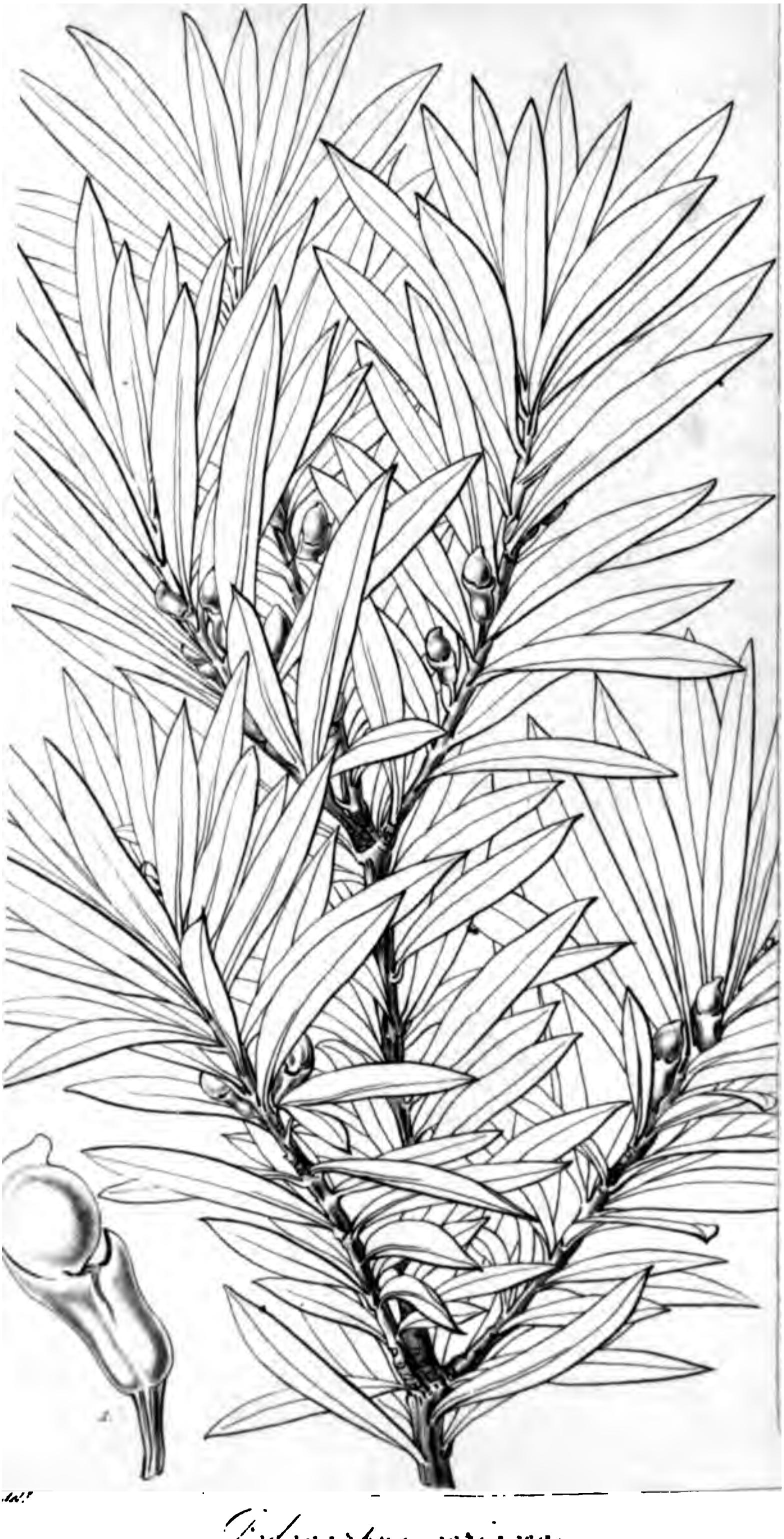




Diagrams of the forms of Pollen



Pollen Collectors of Campanula rotundifolia.



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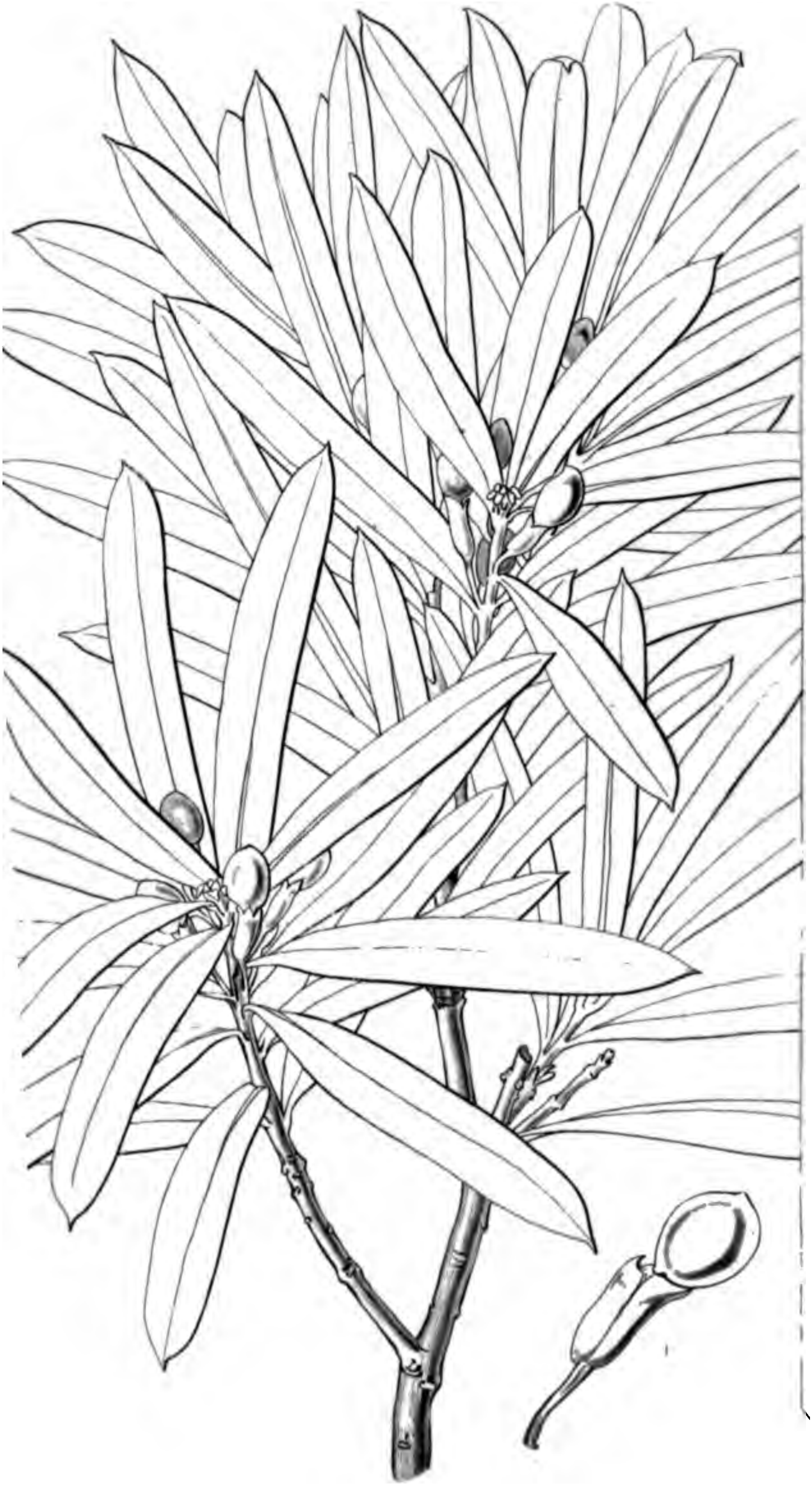
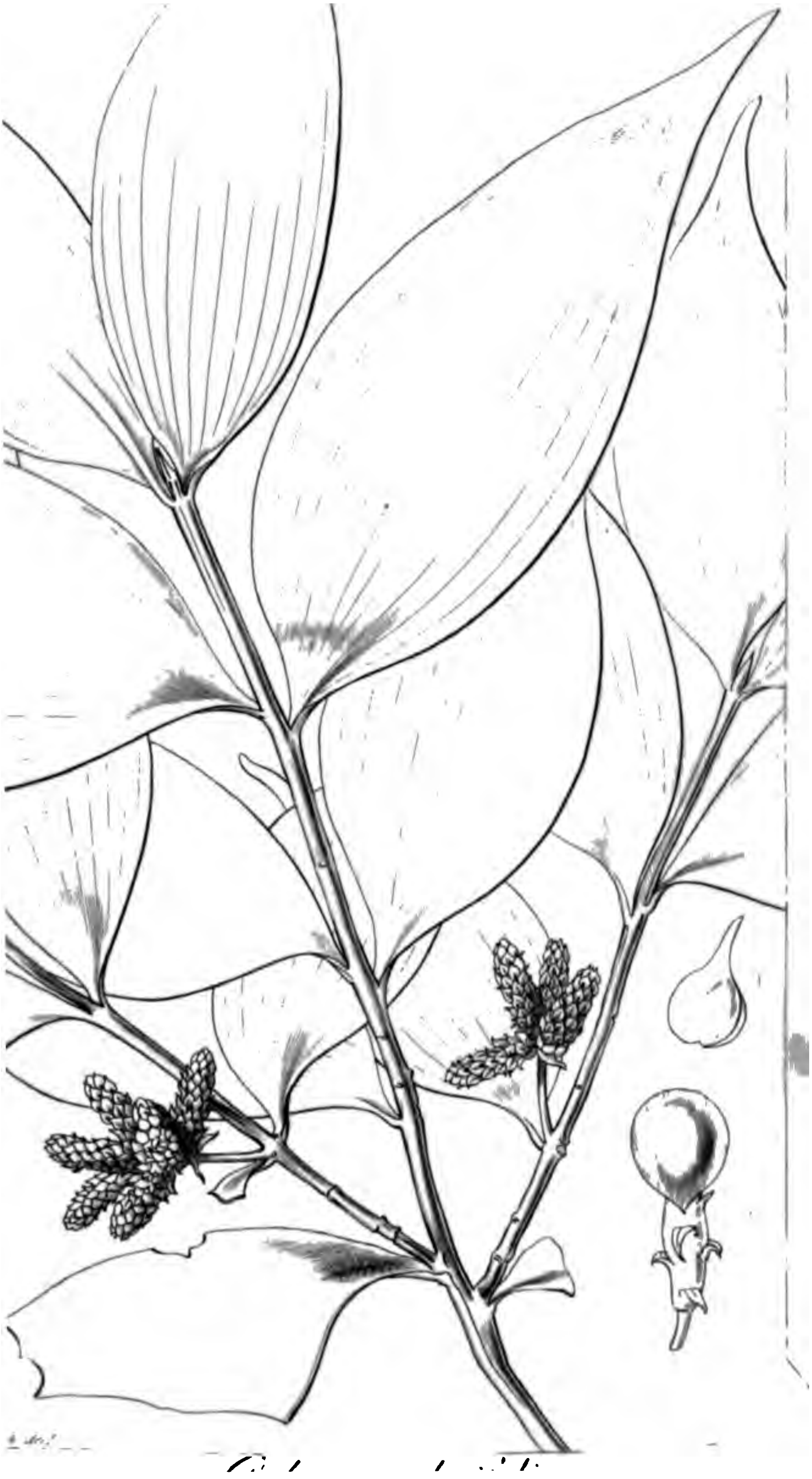
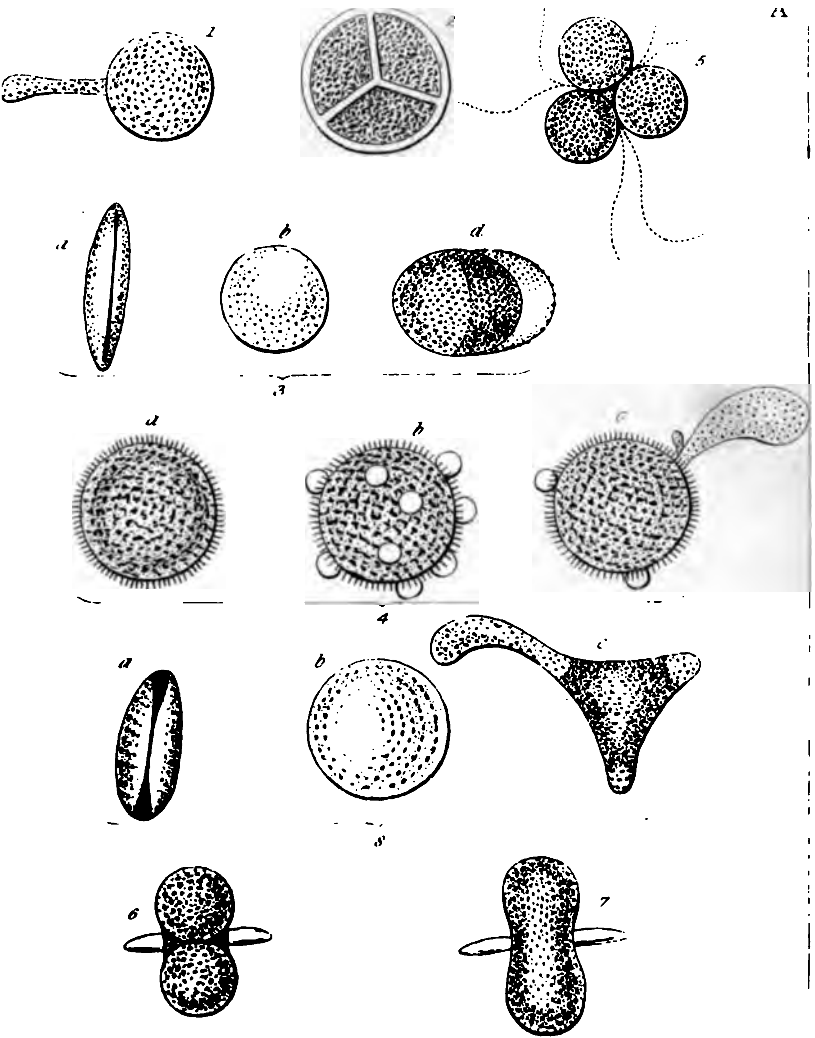
Podocarpus coriacea.

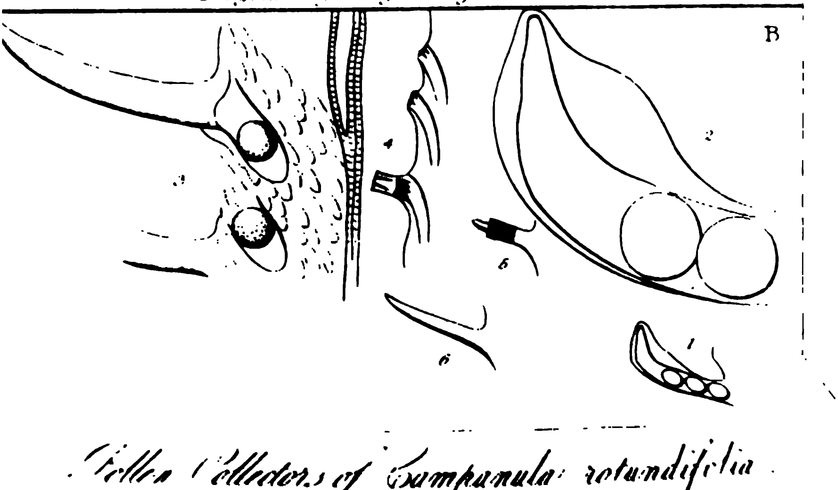


Podocarpus Thunbergii.

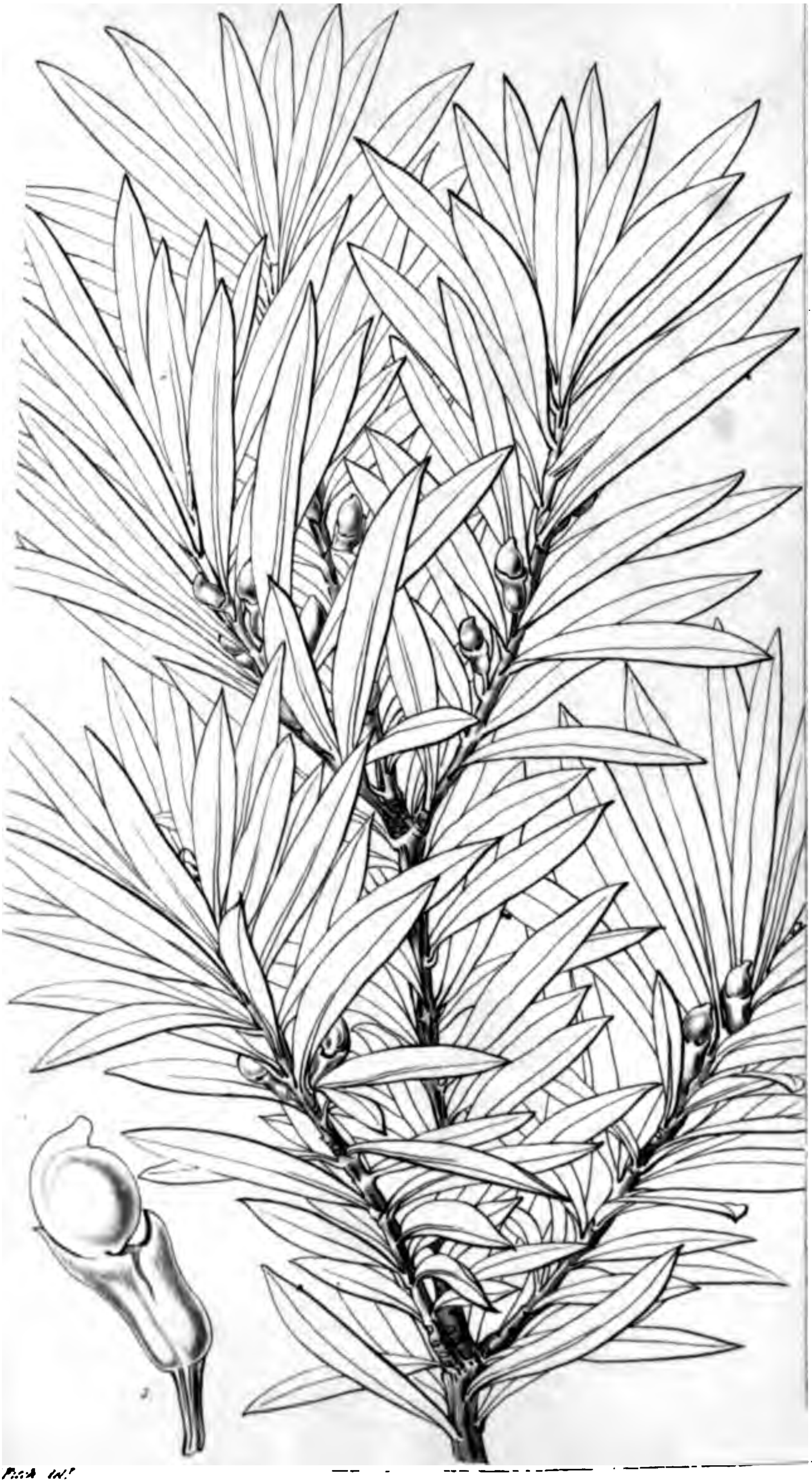




Diagrams of the forms of Pollen



Pollen Collectors of Campanula rotundifolia.



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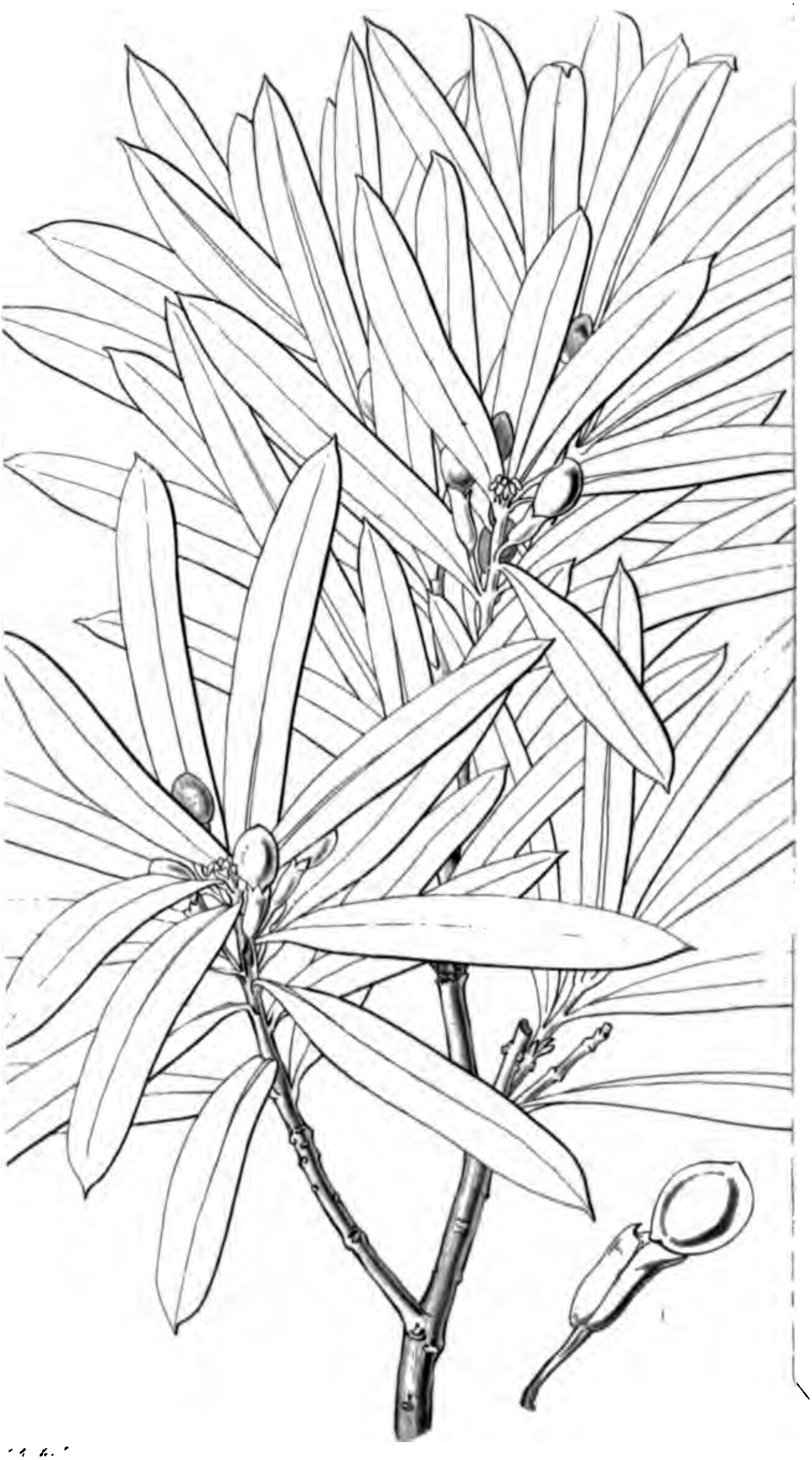
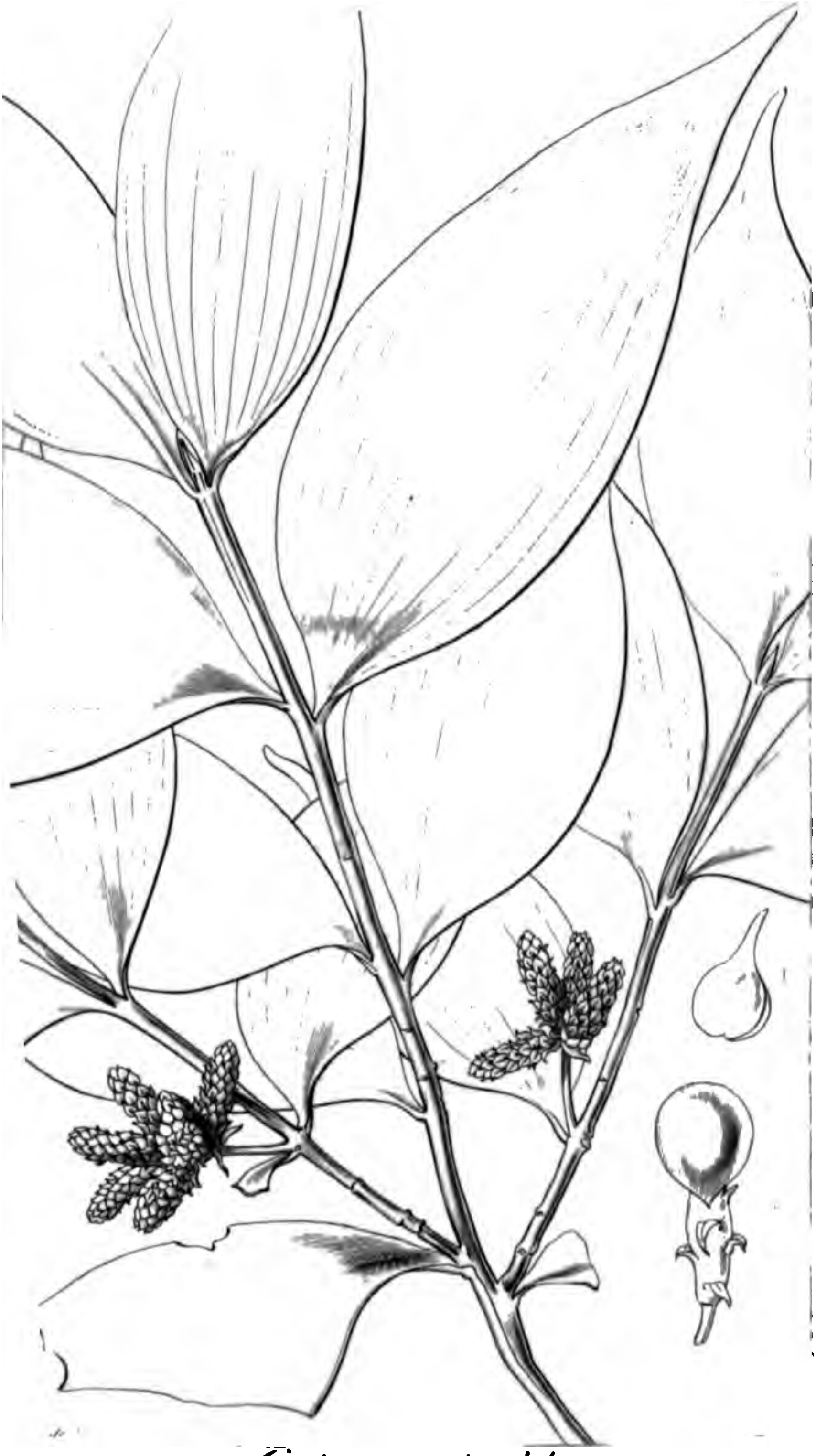
Podocarpus coriacea.



. Podocarpus . Thunbergii .



Podocarpus [illegible]

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